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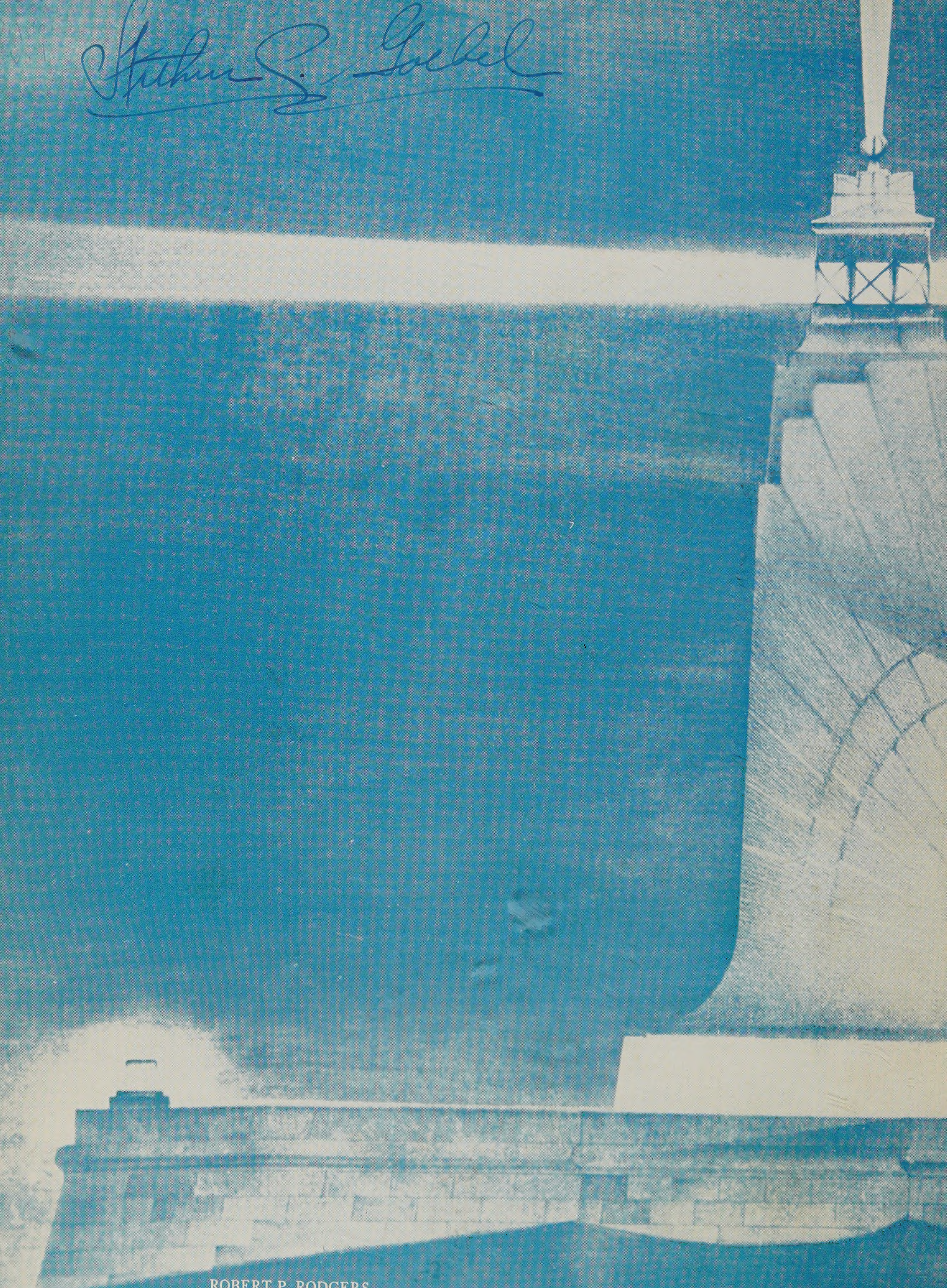

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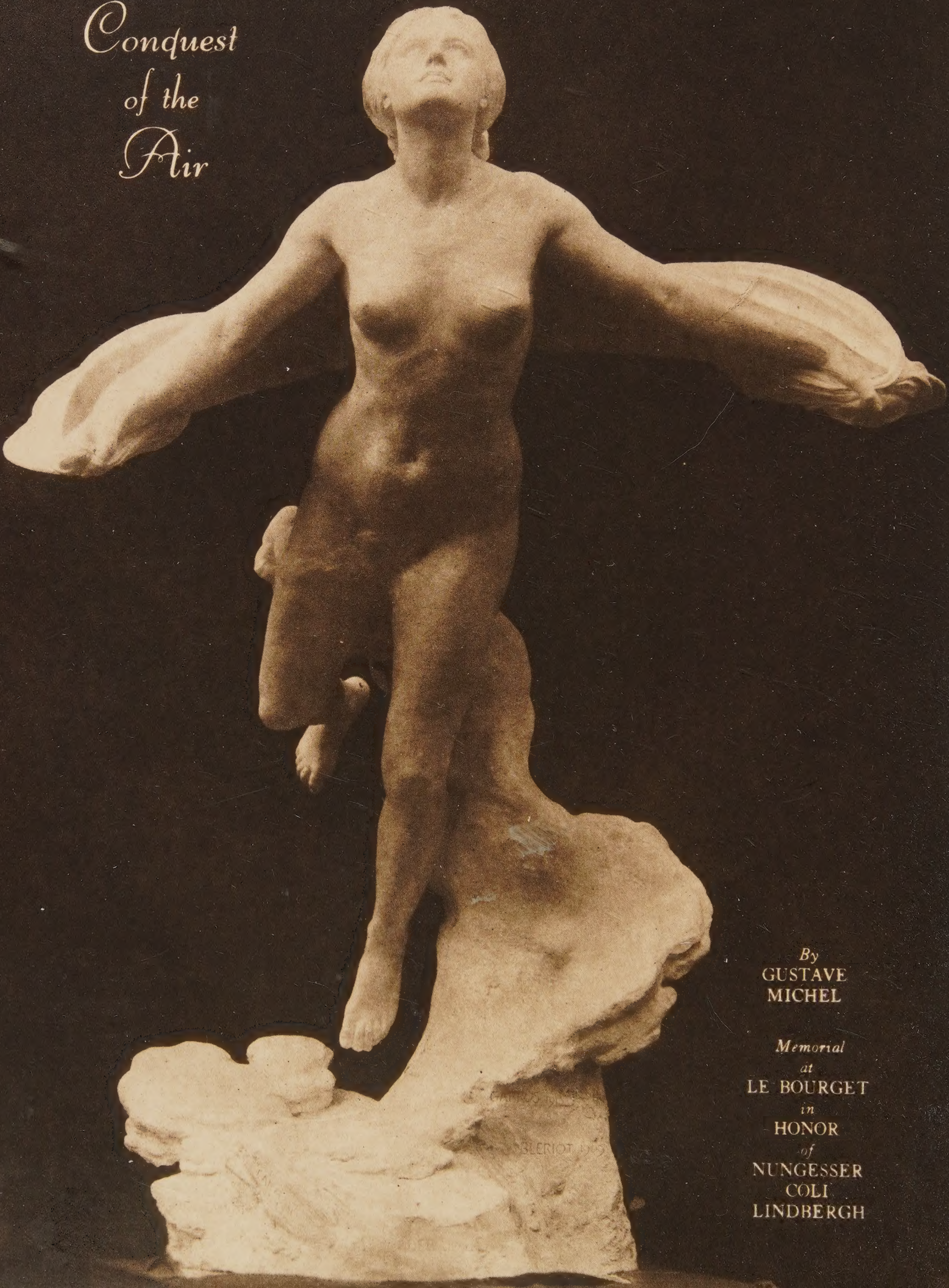

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HISTORIAN'S FOREWORD

First DOCUMENTARY RECORD *of the* CONQUEST *of the* AIR
With Contemporary EVENTS *in the* WORLD'S HISTORY

THIS work may justly claim the distinction of being an International Event, inasmuch as it represents a "coming together" of the Nations in the establishment of the *First Documentary Record* of a New Epoch in the world's history.

The Governments of the world, and the foremost authorities of all countries, have co-operated in the "building" of this memorial to human progress: The First Collection of Historic Prints and Official Documents, recording for posterity the 5,000 years of man's heroic struggle to Conquer the Air.

The notable service which Mr. H. G. WELLS rendered in his *"Outline of History,"* we have undertaken to perform for this New Age upon which we are now entering—a *documentary outline,* or more properly a pictographic record, which unfolds before your vision "the whole story of life and mankind" insofar as it pertains to his adventures, explorations and discoveries in the Air.

Researchers and investigators have been engaged for years in all parts of the world for the purpose of bringing together these historic treasures to be placed within the reach of the people for all time.

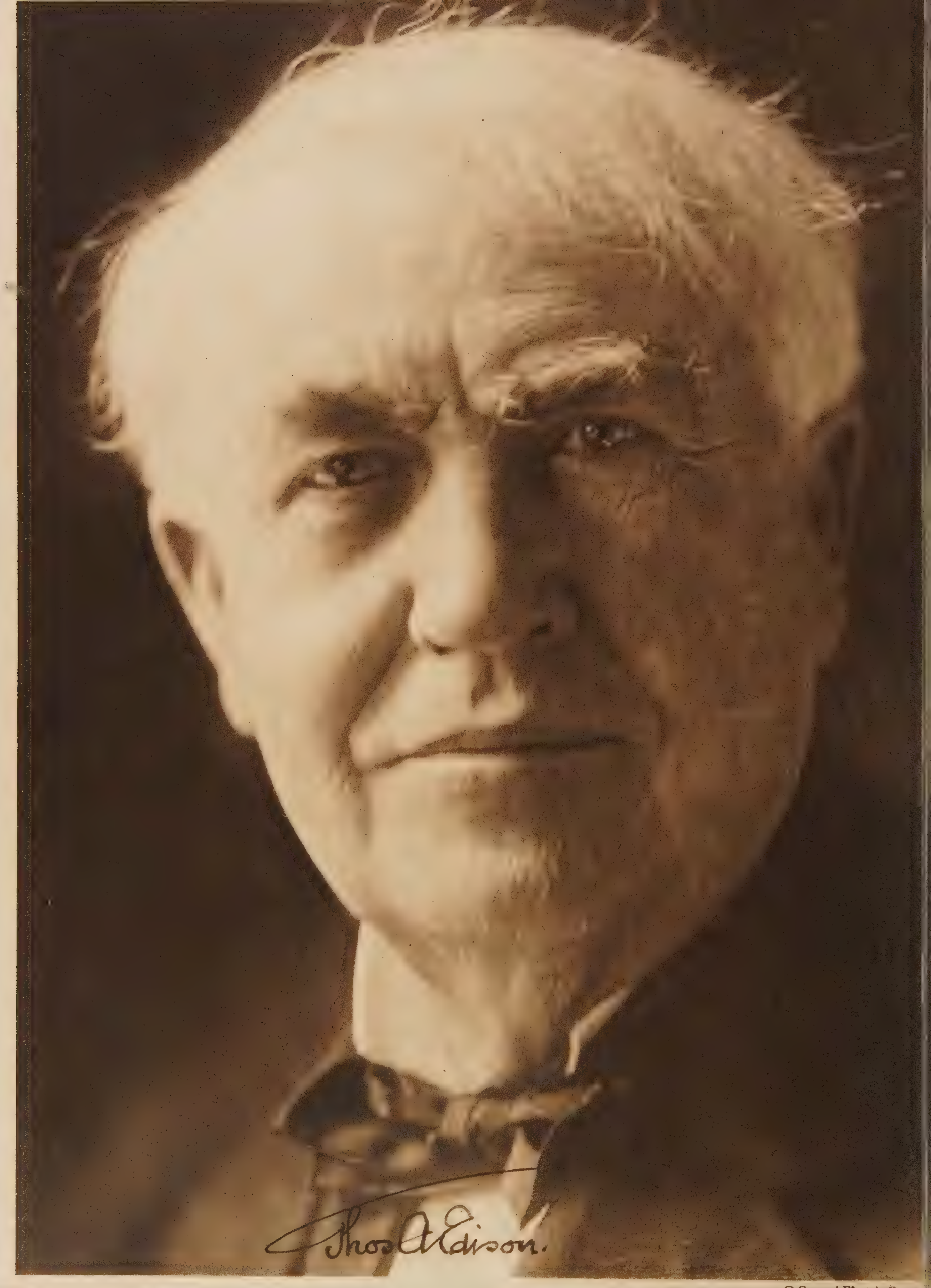
Original Exhibits, valued at more than $1,000,000. are in possession of private collectors and institutions: The British Museum, Science Museum of South Kensington, Bibliotheque Nationale in Paris, Musee Histoire Aeronautique, the Smithsonian Institution at Washington, National Geographic Society, Library of Congress, Museums at Berlin, Munich, Rome, Vienna, Brussels. The official sources are recorded in these pages.

The most famous collections in Europe are represented by the Tissandier Collection in Paris, the Dollfus Collection in France, the Norman Collection at the British Patent Office, the Cuthbert Collection in London, the Collections of Comte de la Vaulx, Sir David Salomons, Bart., Baron Carl de Vinck, The Royal Aeronautical Society in London, and the Government Archives in Germany and Italy.

We are further indebted to the Museums, Libraries and Aeronautical Associations recorded in these pages, and especially to the distinguished authorities on the *International Advisory Board.*

The plan and scope of the work, with its historical method in pictography, are outlined in the Contents Pages and the Chronological Exhibits. More than 1,200 exhibits of historical value, with nearly 200,000 words of analysis and exposition, preserve the epoch-making story through fifty centuries until we reach its culmination today in triumphant victory—the Greatest Adventure in the annals of mankind.

FRANCIS TREVELYAN MILLER.



Thos A Edison.

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JOSEPH and ETIENNE MONTGOLFIER—1783
Inventors of First Balloon in the World (France)

DE ROZIER—(France)—1783
First Aeronaut in World

LUNARDI—(Italian)—1784
First Ascent in England

SADLER—(England)—1784
First English Aeronaut

Mrs. SAGE (England) 1785
First Woman Aeronaut

BLANCHARD (France) 1785
First Over English Channel

JEFFRIES (American) 1785
First Channel Passenger

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With the Thousands who have
Blazed the Paths in the Skies

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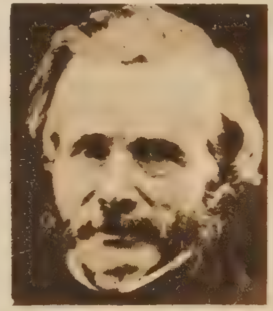
¶ To every man who has contributed, and will contribute in the future, to the development of Human Progress in all its phases, I extend the hand of fellowship.

¶ To the Montgolfiers, to Zeppelin, to the Wright Brothers—and to the thousands who brought about this New World which is constantly being re-created by Science, Invention, and Discovery, I pay tribute.

Thos A Edison.

CAYLEY—(England)—1796
Father British Aeronautics



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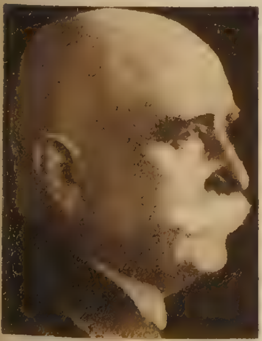
First Engine-Driven Model

LILIENTHAL (Ger.) 1891
First Successful Glider



ZEPPELIN (Germany) 1898
First Rigid-Dirigible

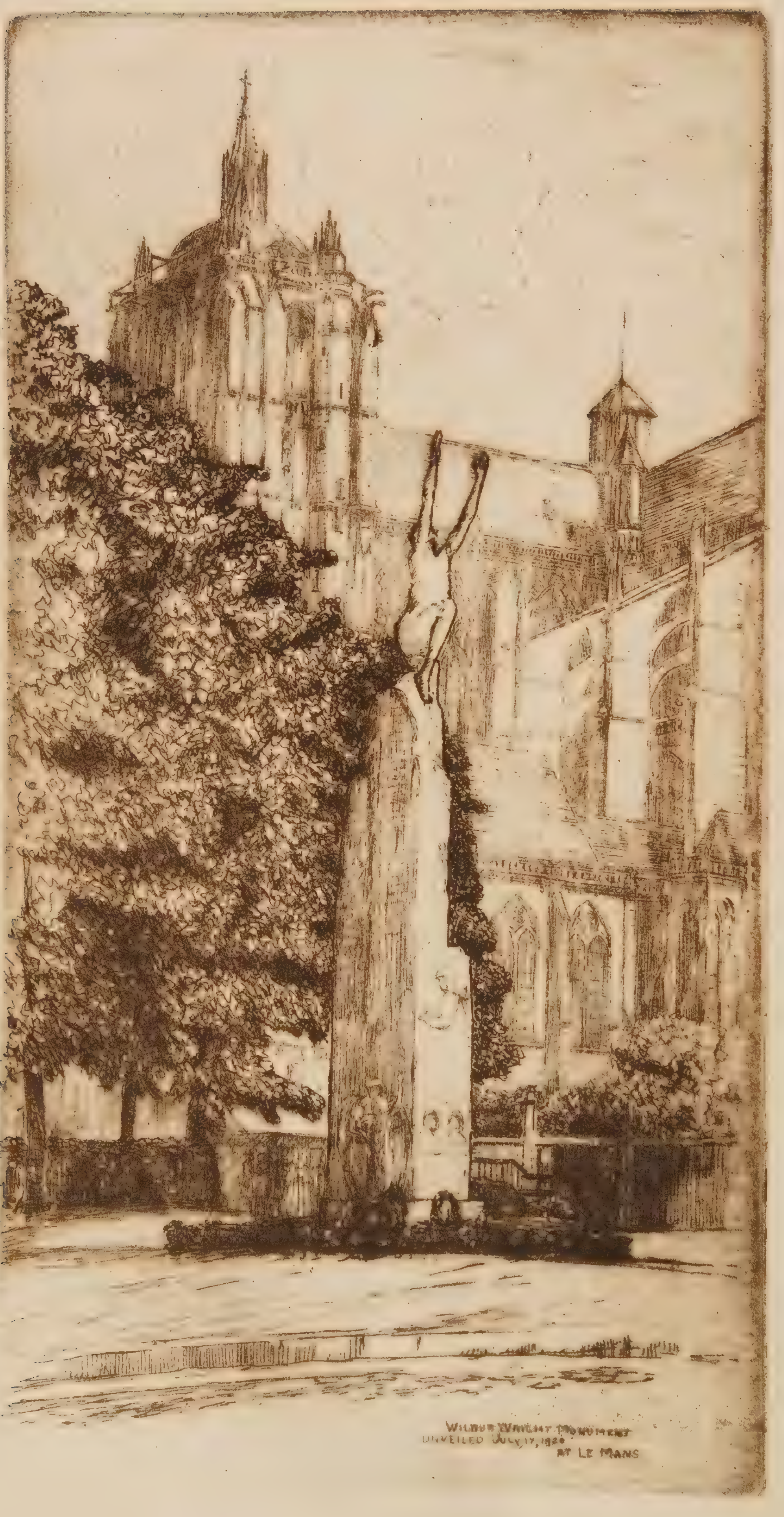
ADER—(France)—1891
First Aeroplane Trials

LANGLEY—(America)—1896
First Power Model to Fly

ORVILLE WRIGHT—1903—WILBUR WRIGHT
First Successful Airplane Flight in the World (America)

Wilbur Wright.

Orville Wright



Monument to the Wrights at Le Mans France

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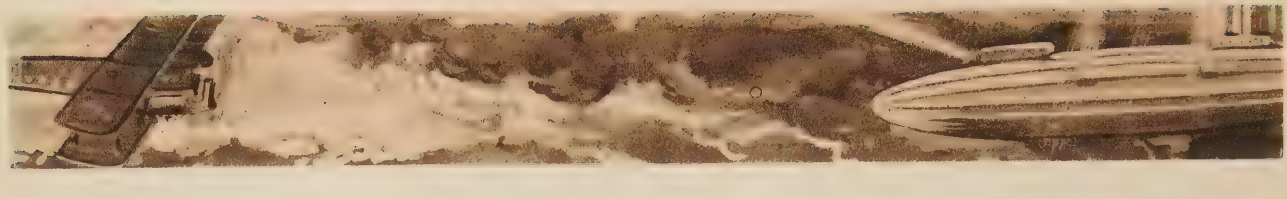

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Great Events in the New Age

"No one can at this time foretell the vast possibilities" — President Hoover

GRAF ZEPP
F.A.A. DAHME
© 1928

Victory

The Battle Against the Elements

HISTORIC
PAINTING
By
F. A. A. DAHME

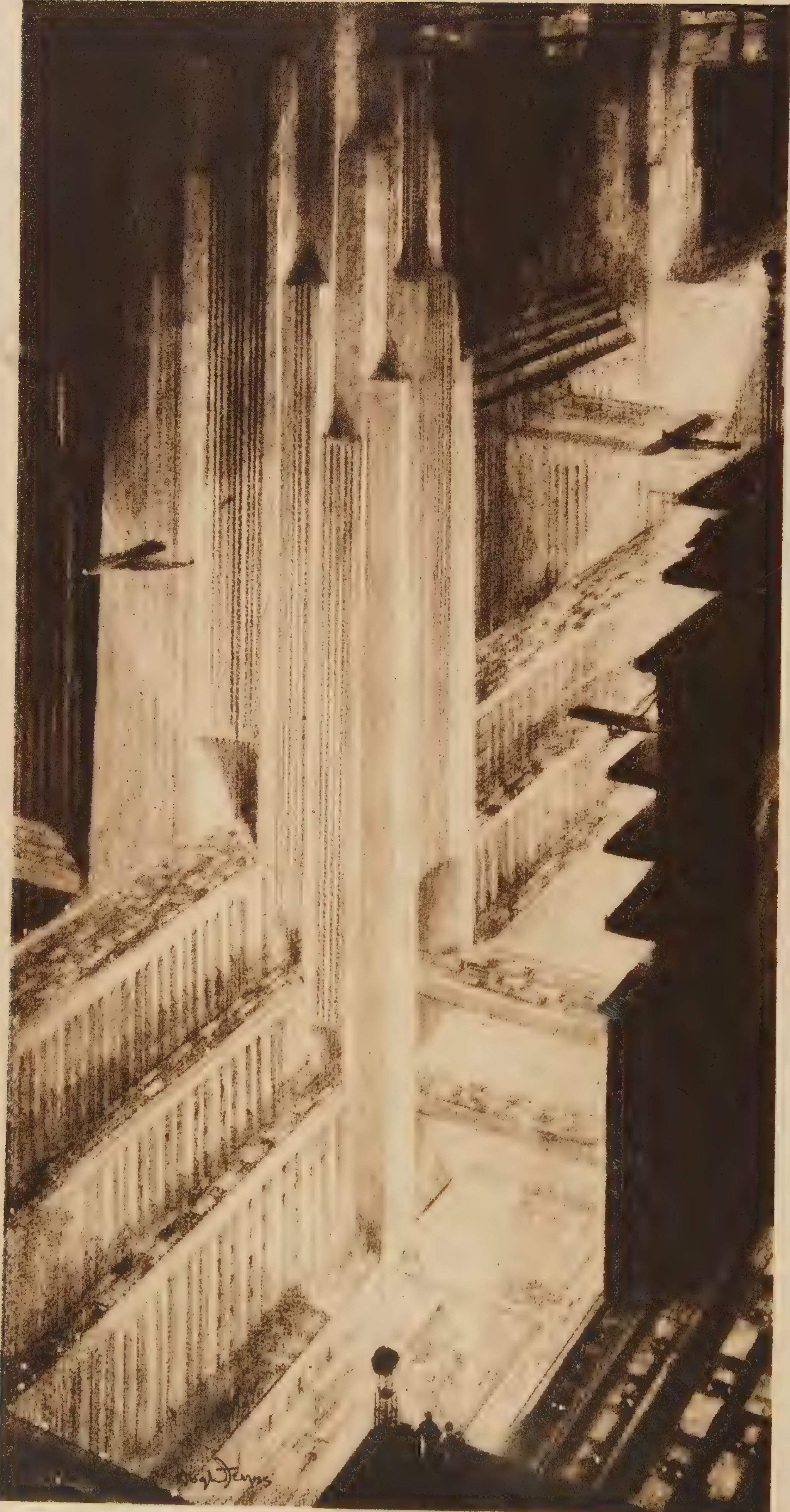
Memorial
to the
EPOCHAL
VOYAGES
of the
GRAF
ZEPPELIN

Triumph

The New Age

HISTORIC
PAINTING
By
F. A. A. DAHME

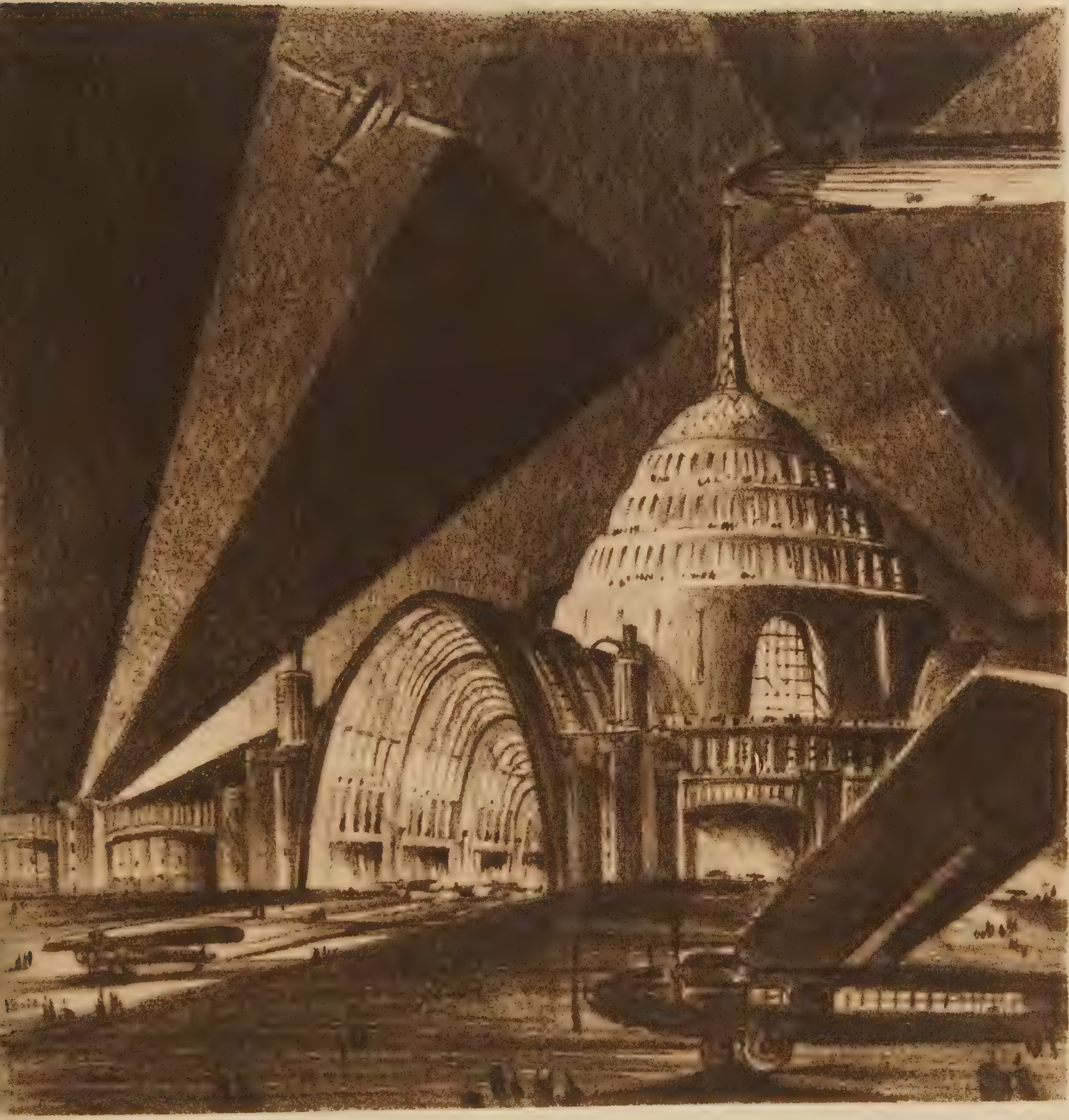
Memorial
to
LINDBERGH'S
Epochal
Flight
Across
the
ATLANTIC
"ALONE"



Metropolis of Tomorrow

By
HUGH
FERRISS
American
Architect

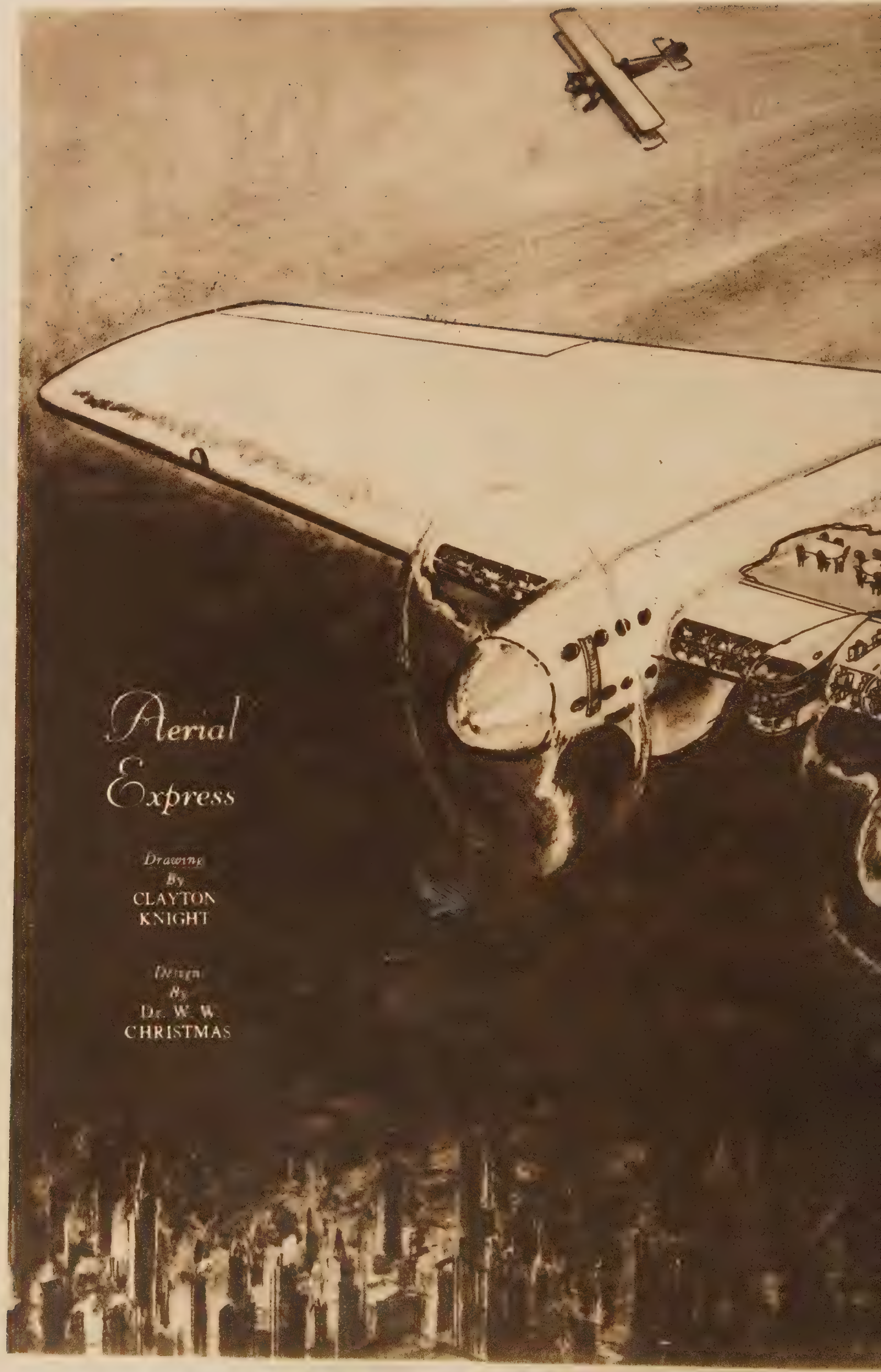
HIGHWAYS
on
Towering
Structures
and
SKYWAYS
of the
New
Civilization



Grand Central Airport for the Capitals of the World

The Road to the Skies

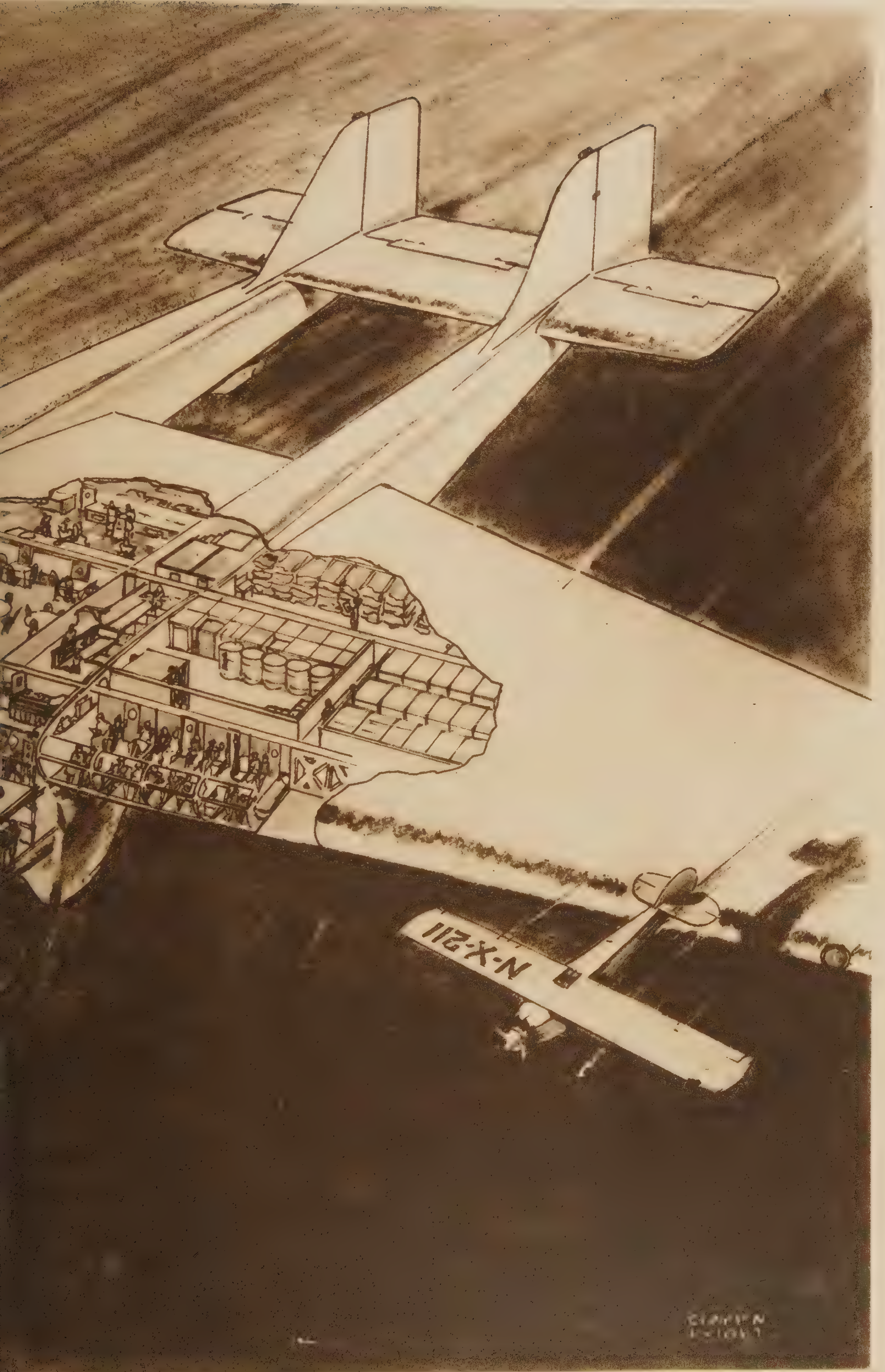
Designed by FRANCIS KEALLY, American Architect



Aerial Express

Drawing
By
CLAYTON
KNIGHT

Design
By
Dr. W. W.
CHRISTMAS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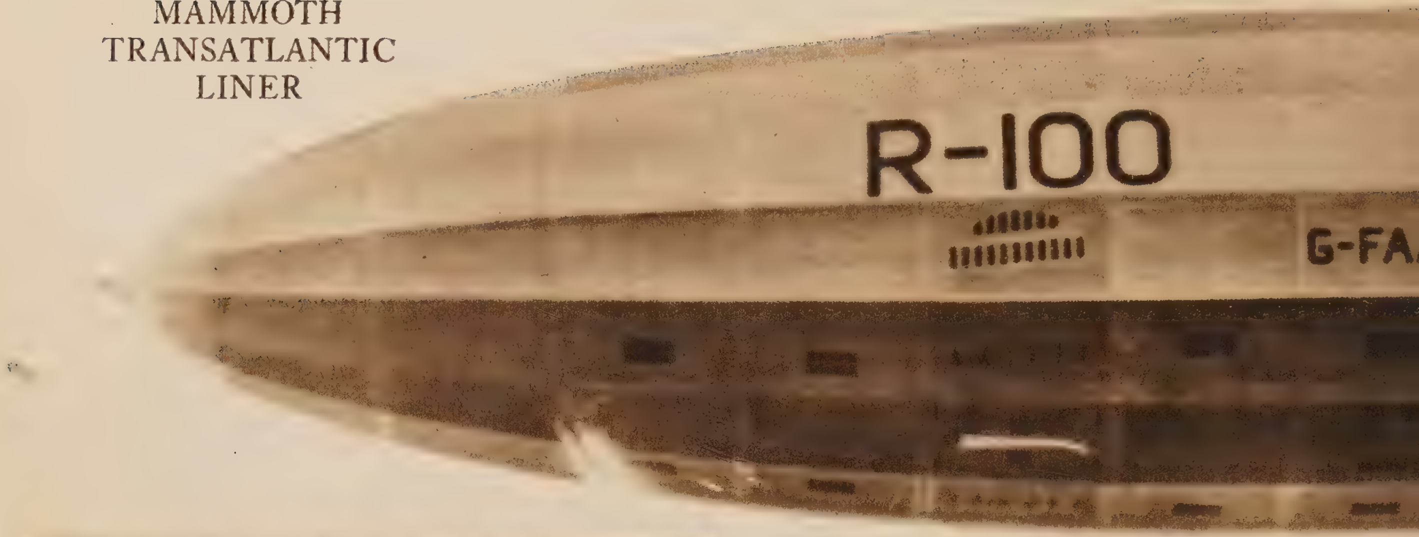
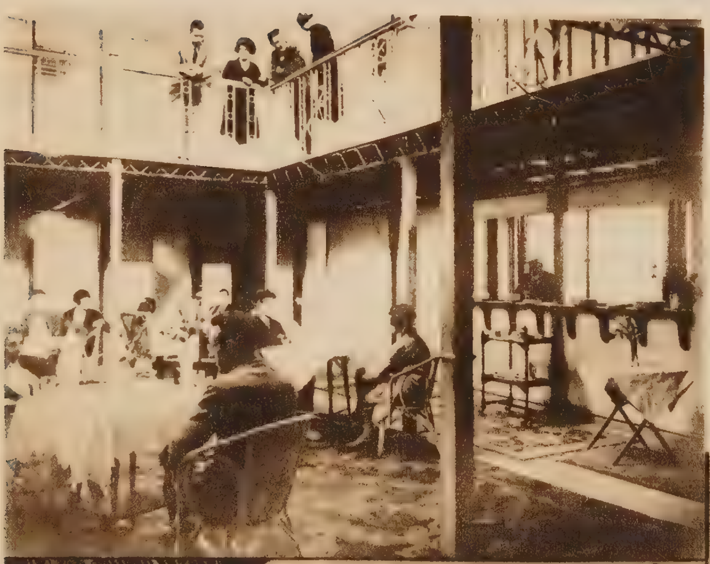
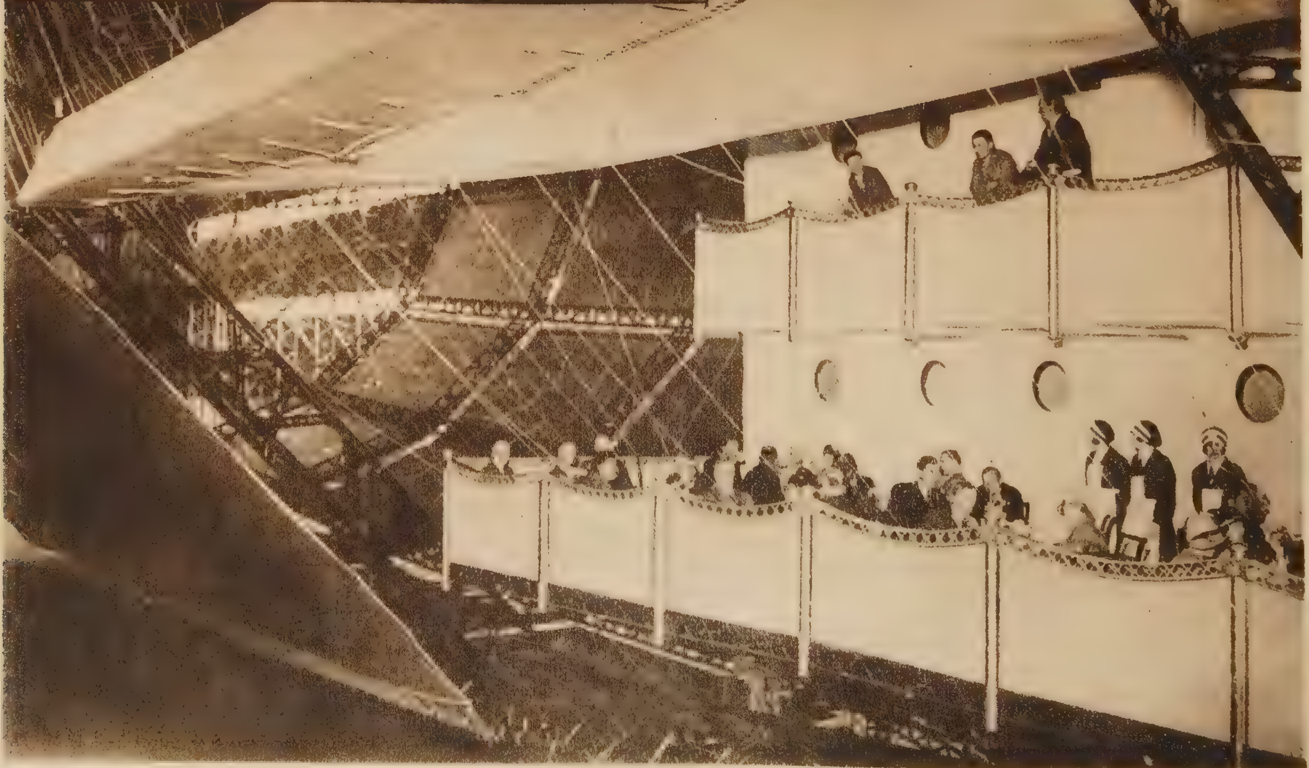
MAMMOTH TRANSATLANTIC LINER



709 feet long—133 feet wide
Six 700 H.P. Rolls-Royce Motors
Speed 80 Miles an Hour



AIRSHIP LARGE AS MAURETANIA—Equipped to carry 100 Passengers and Crew of 40 Across the Atlantic in 48 Hours—Official Photograph in Collection of Commander C. D. Burney shows Members of Parliament having tea on one of the Promenade Decks —Photographs © Underwood.

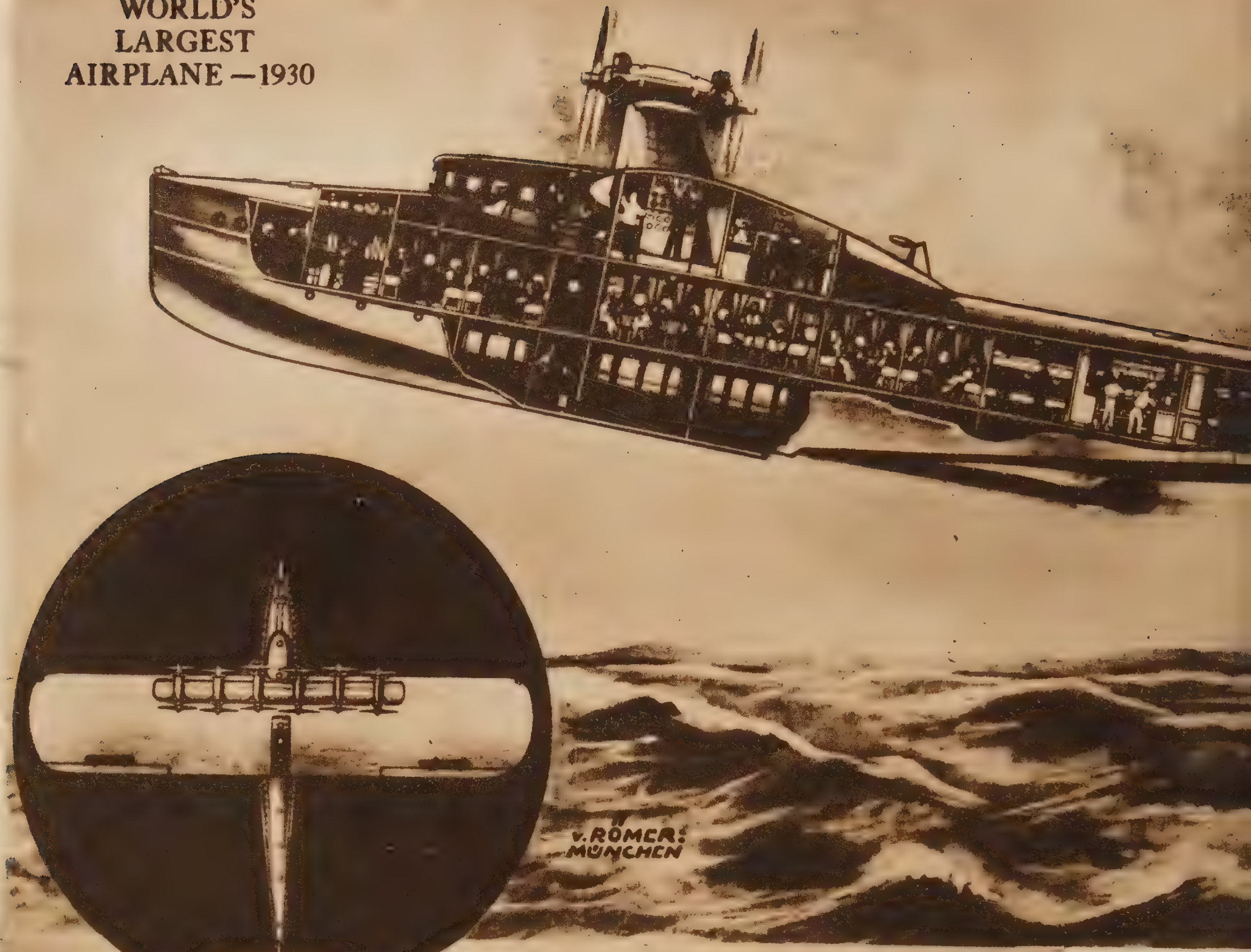


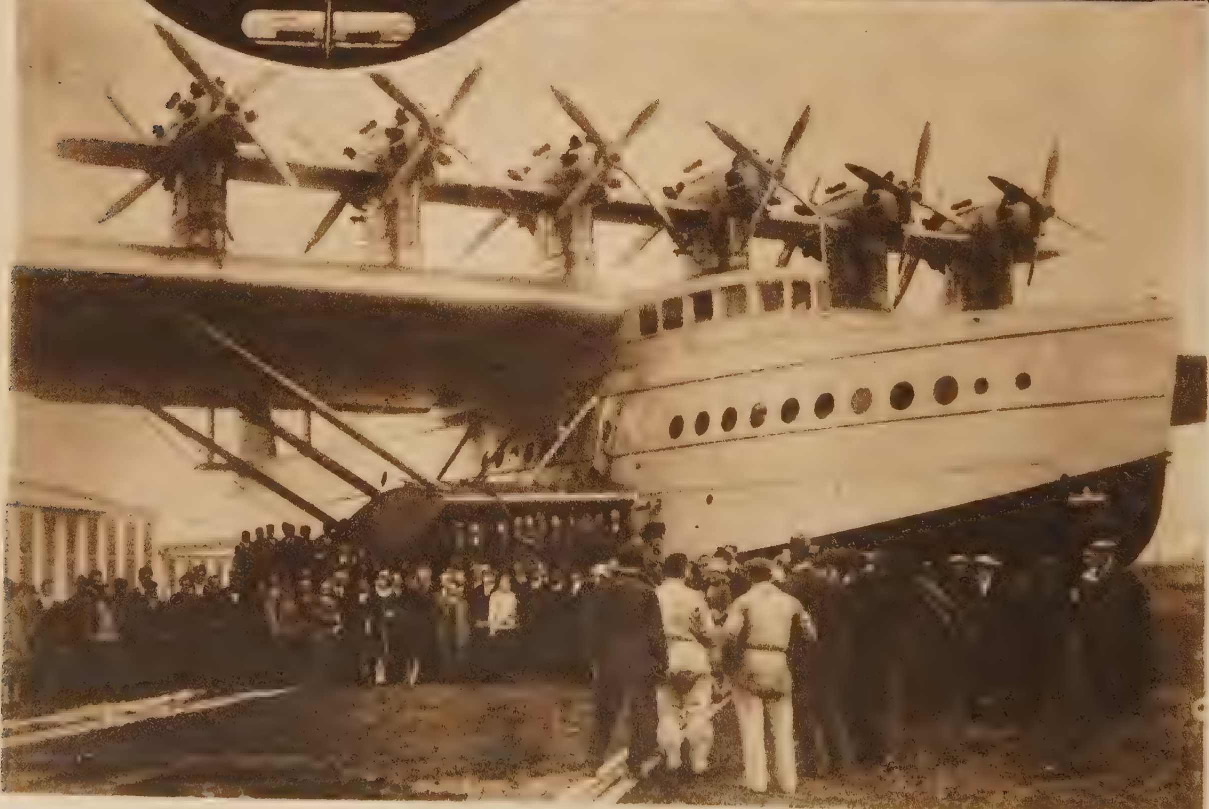
WORLD'S
LARGEST
AIRSHIP
(1930)

BRITISH R-100
ENGLAND
to
AMERICA
GIANT DIRIGIBLE

GRAND SALON OF AIR LINER—R-100 cost $2,500,000—It combines all the luxury of a Flying Hotel with its Lounging Rooms, Dining Salon, Staterooms, Observation Decks, Dancing and Deck Games. It is a sister ship of R-101, built for service between England and India.

WORLD'S LARGEST AIRPLANE—1930

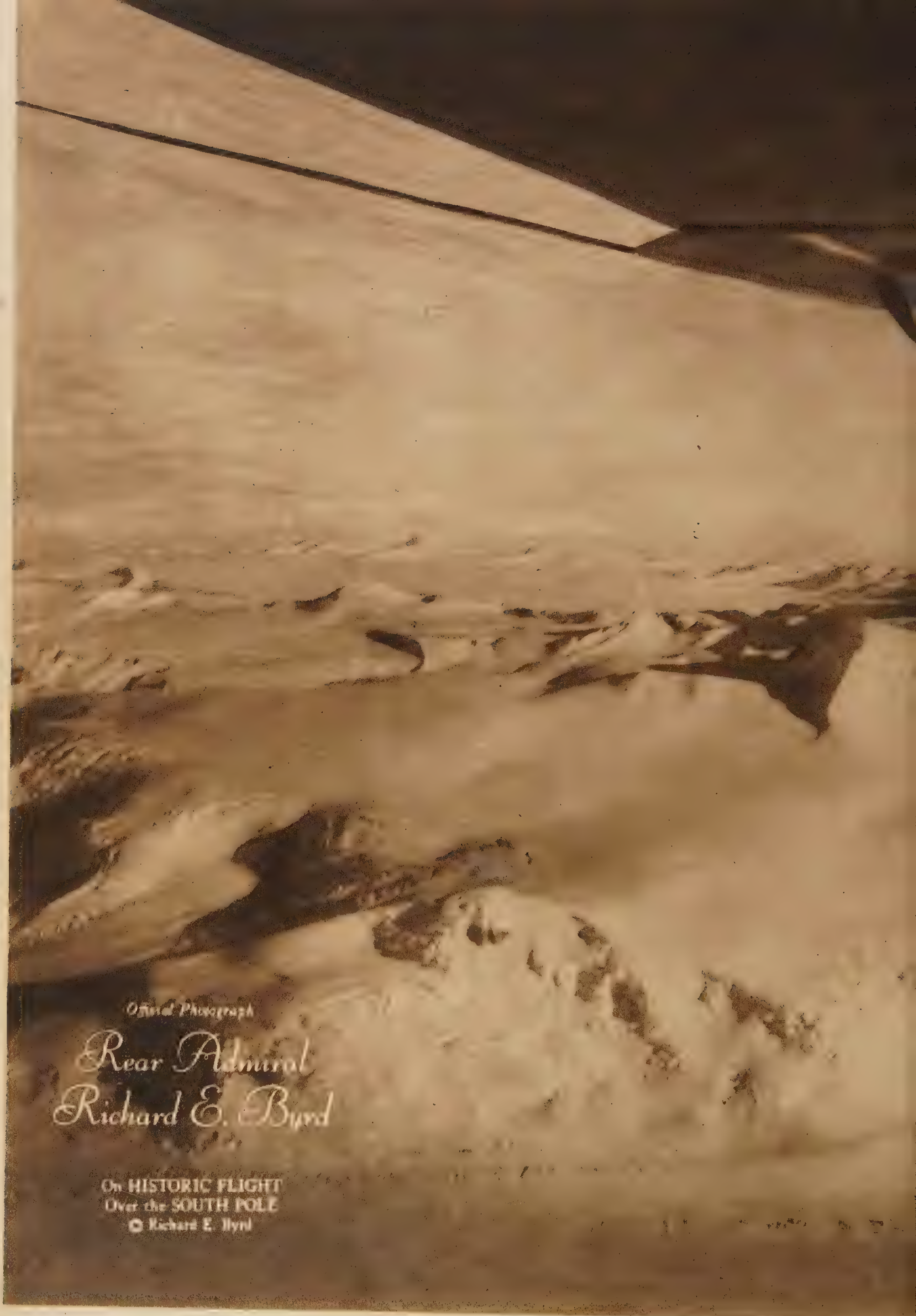




12 Motored
SHIP
Carrying
169
PASSENGERS
in its
TRIAL
FLIGHT

Official
Photographs
Collection of
Dr. CLAUDE
DORNIER
Friedrichshafen
Germany

GIANT
GERMAN AIR LINER
DORNIER
DO-X



Official Photograph

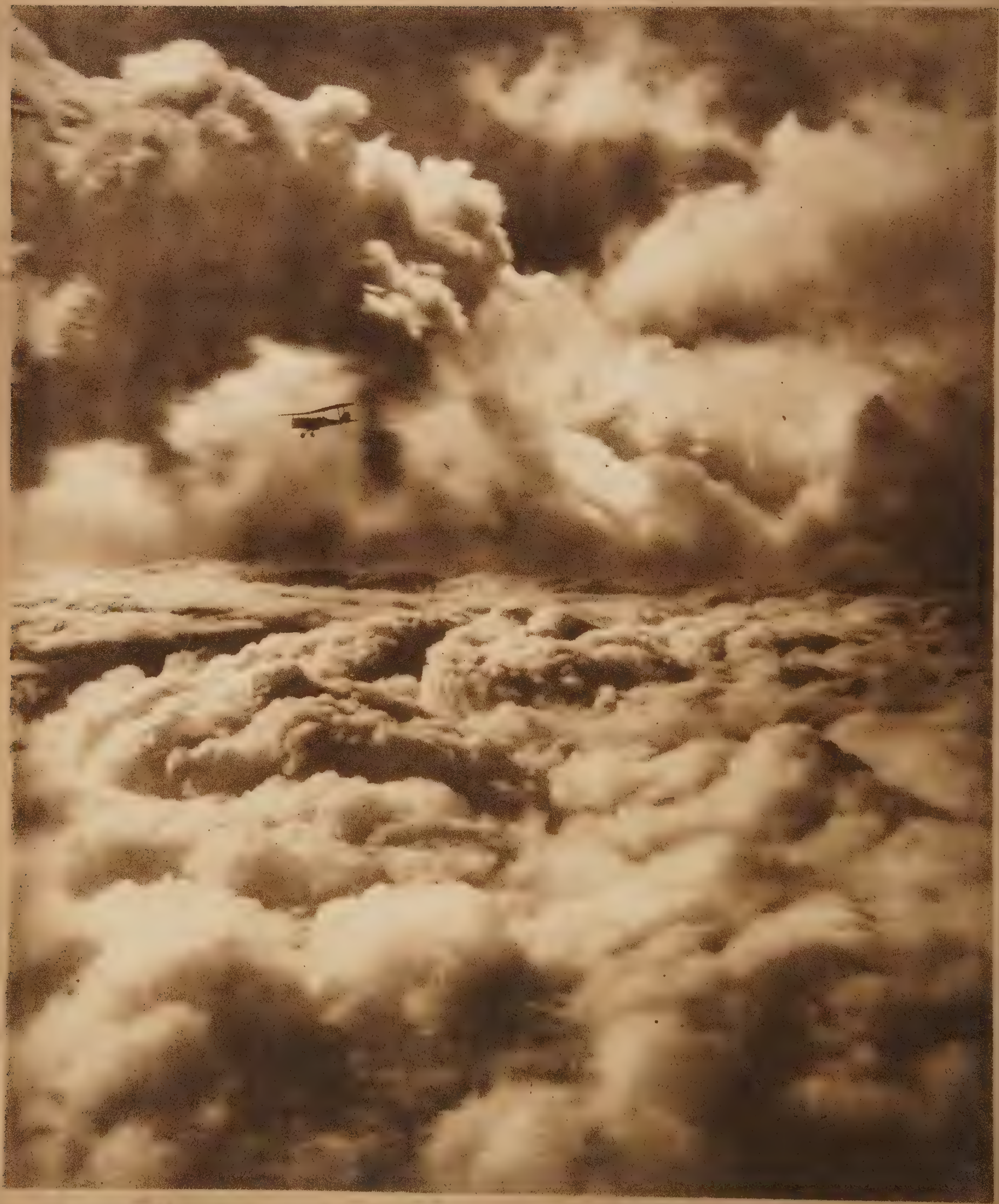
Rear Admiral
Richard E. Byrd

On HISTORIC FLIGHT
Over the SOUTH POLE

© Richard E. Byrd

Bottom of the World

Camera Record
By Capt. ASHLEY C. McKINLEY
of the Byrd Expedition



The Playground of the Winds

Alfred G. Buckham Capt. F.R.P.S.
Late R.A.F.

R101

Alfred G Buckham Capt.

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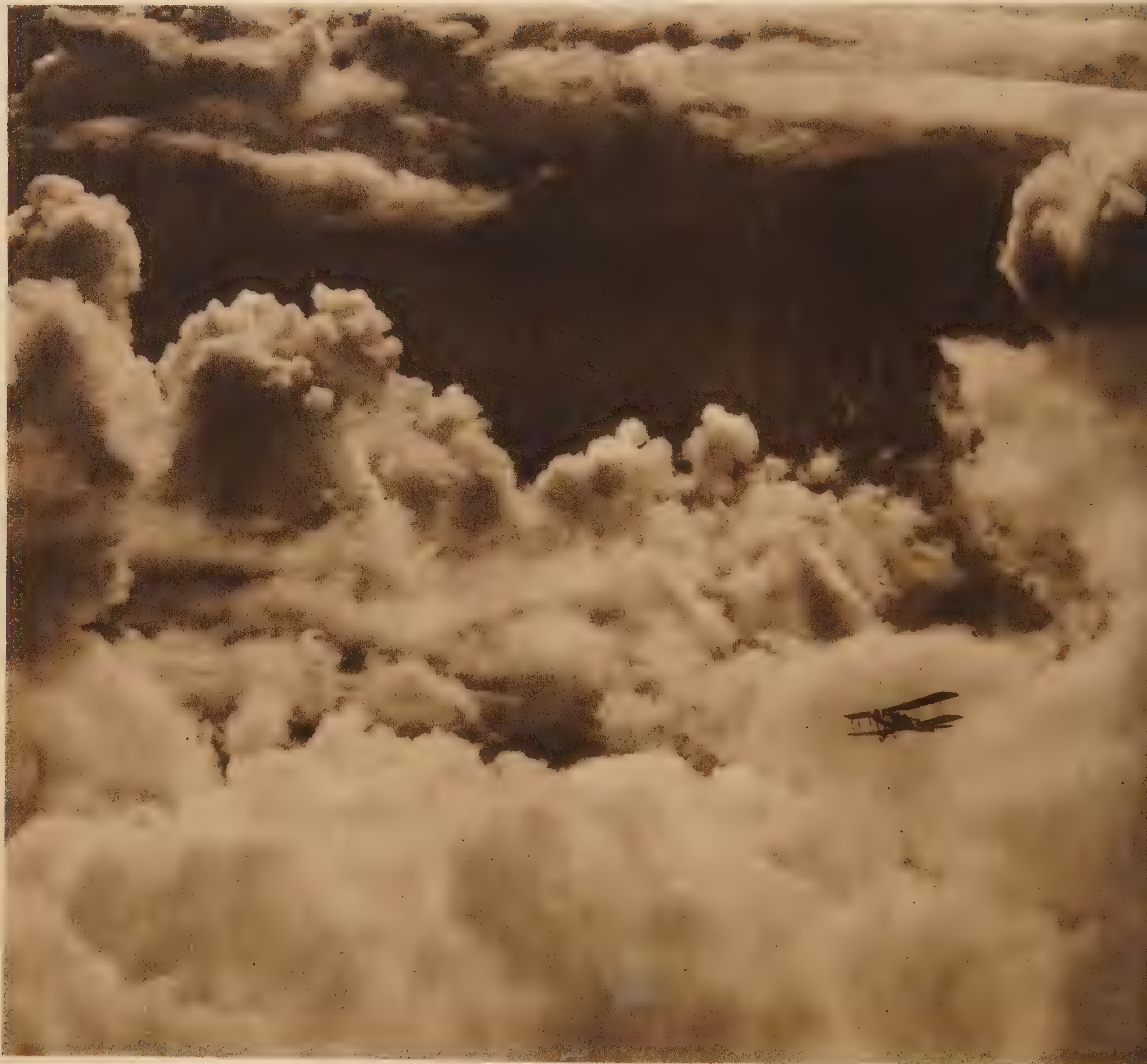

A showery Summer day.

Alfred G. Buckham, Capt. F.R.P.S.
late R.A.F.

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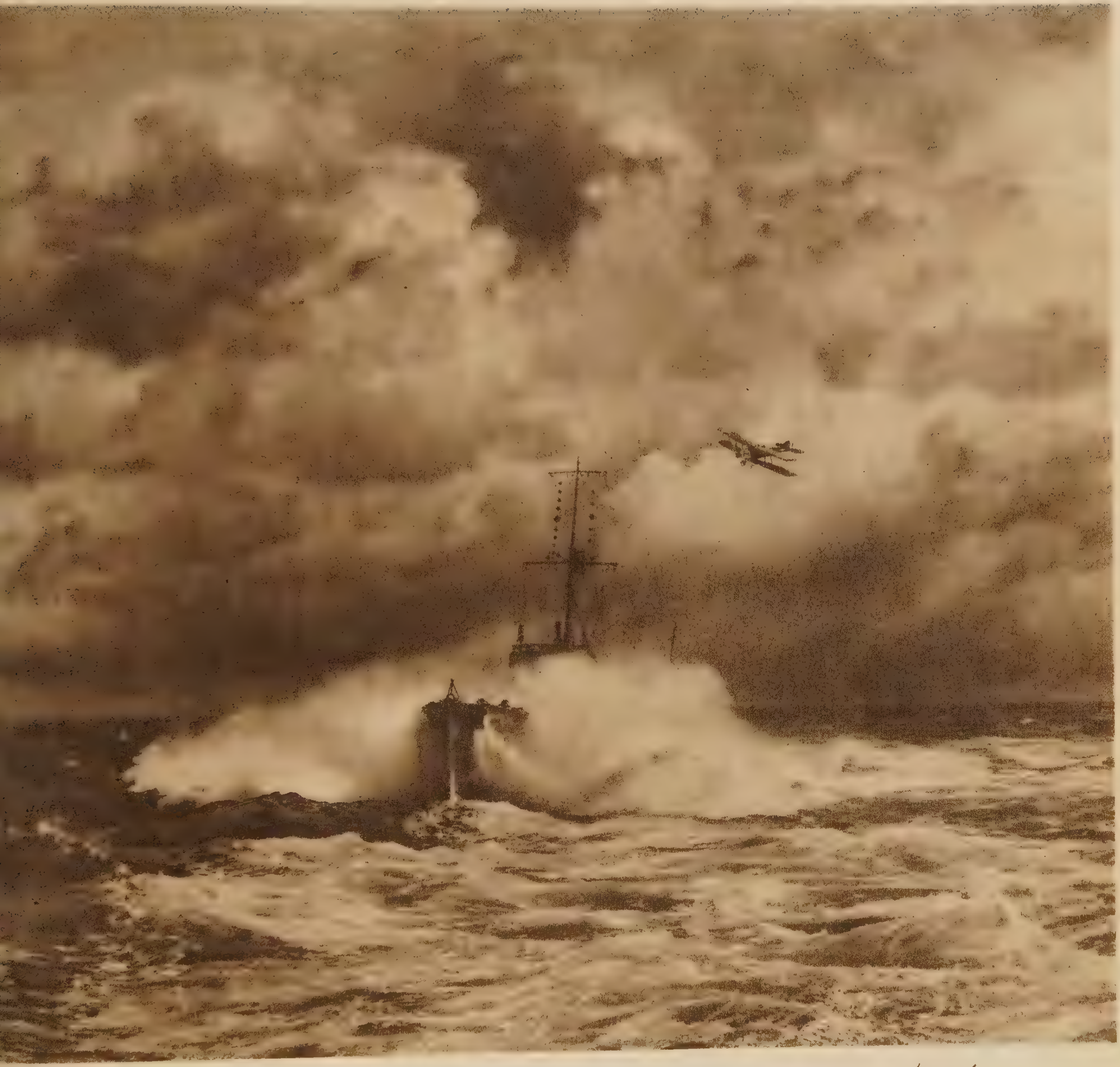
Top
# of the
World

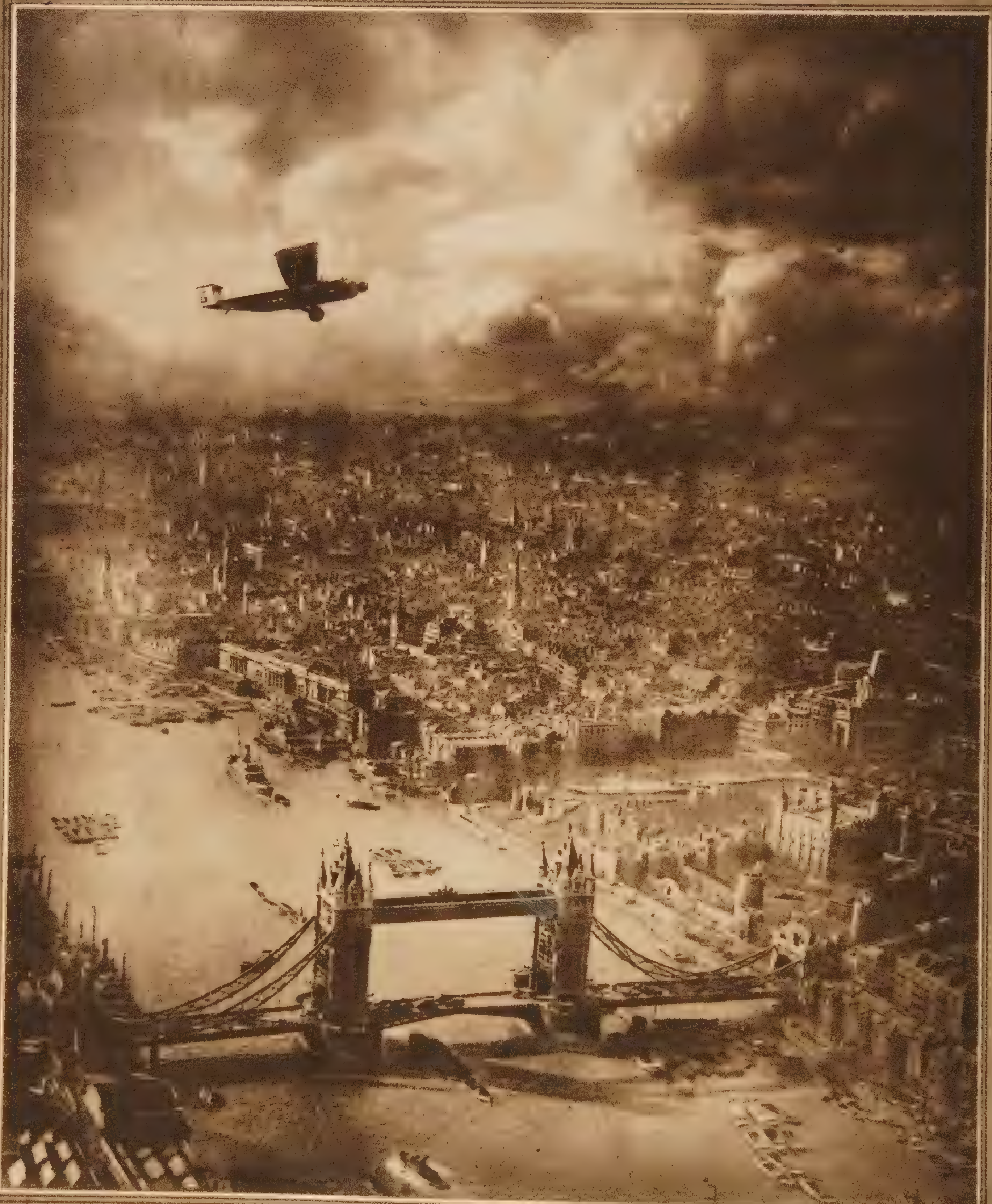


In the North Sea 1918

Alfred G. Buckham Capt.

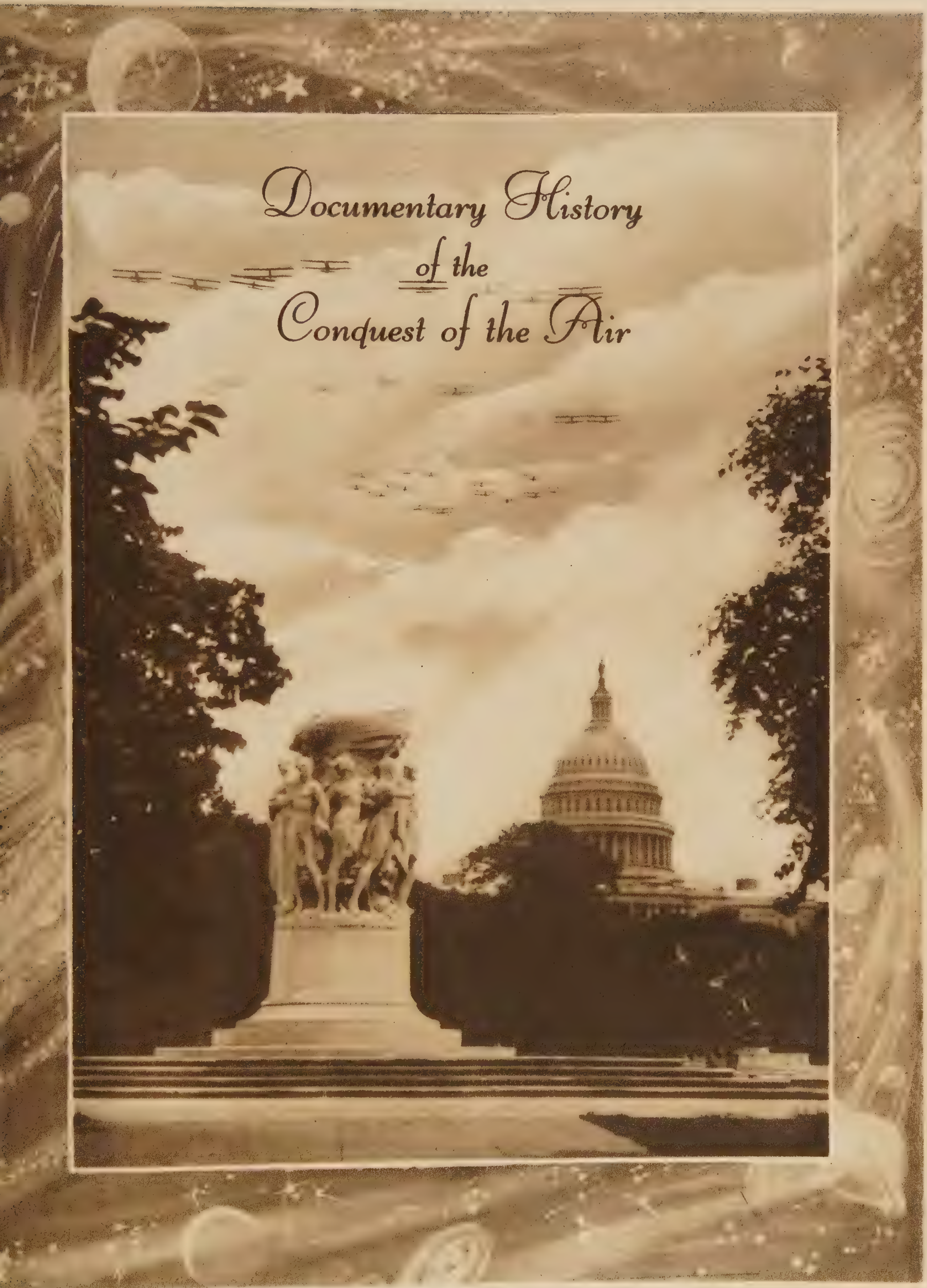
ALFRED G. BUCKHAM

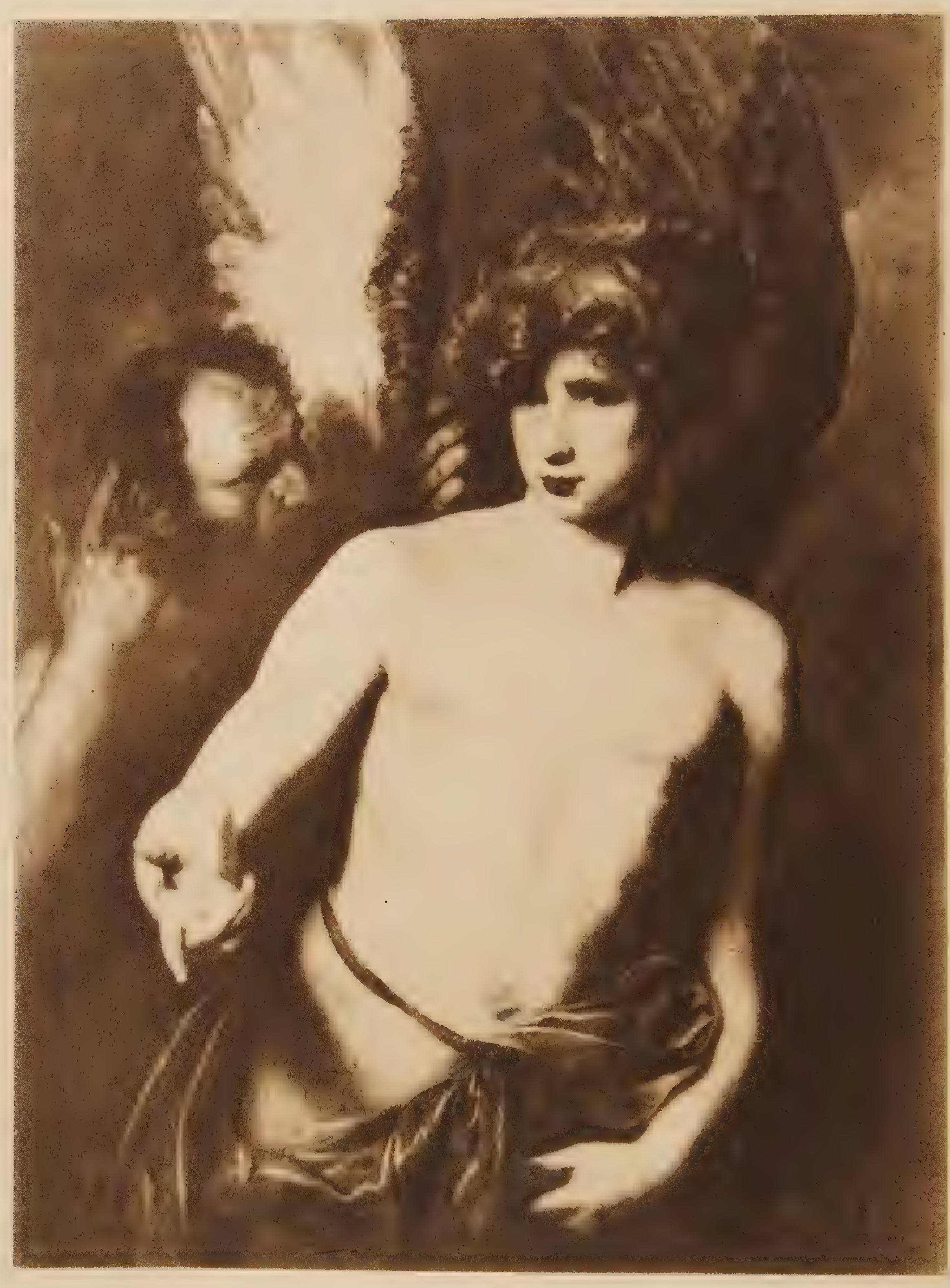
Fine Art Studies



The Gateway to London.

Documentary History of the Conquest of the Air





Painting By Sir Anthony Van Dyck (1599-1614)

"Daedalus and Icarus"

PART I

WINGS—*Masterpieces in the* WORLD'S GALLERIES

Conceptions of the OLD MASTERS *in Painting and Sculpture*

THE Story of "Man's Attempt to Fly" is as old as the human race. From the moment that he discovered himself earthbound he has been struggling to break the chains of bondage. Unable to solve the mystery of flight by physical means, he attributed it to some supernatural power, a consummation to be gained in another world after death—something beyond him.

The origin of this thought and its evolution is traceable from the time that man rose out of the geological ages, a period now calculated by archeologists at as high as 1,000,000 years, on an earth that has been flying around the sun for some 2,000,000,000 years.

Through the processes of Time, and the slow unfoldment of human intelligence, we have come up through the Stone Age, the Bronze Age, the Iron Age, until at last we have reached the Air Age, with its illimitable possibilities.

Human progress begins in the imagination; ideas appear first in the minds of men and are transferred to stone or canvas or paper. The inventor and the scientist follow with practical adaptations of these visionary speculations.

We shall confine our story of human courage, daring and indomitable will, leading to eventual triumph over the elements, to the inscribed records in what we call the historical period of man—documentary evidence which restricts itself to from 5,000 to 6,000 years in which his heroic efforts to materialize his imaginative conceptions have taken definite form.

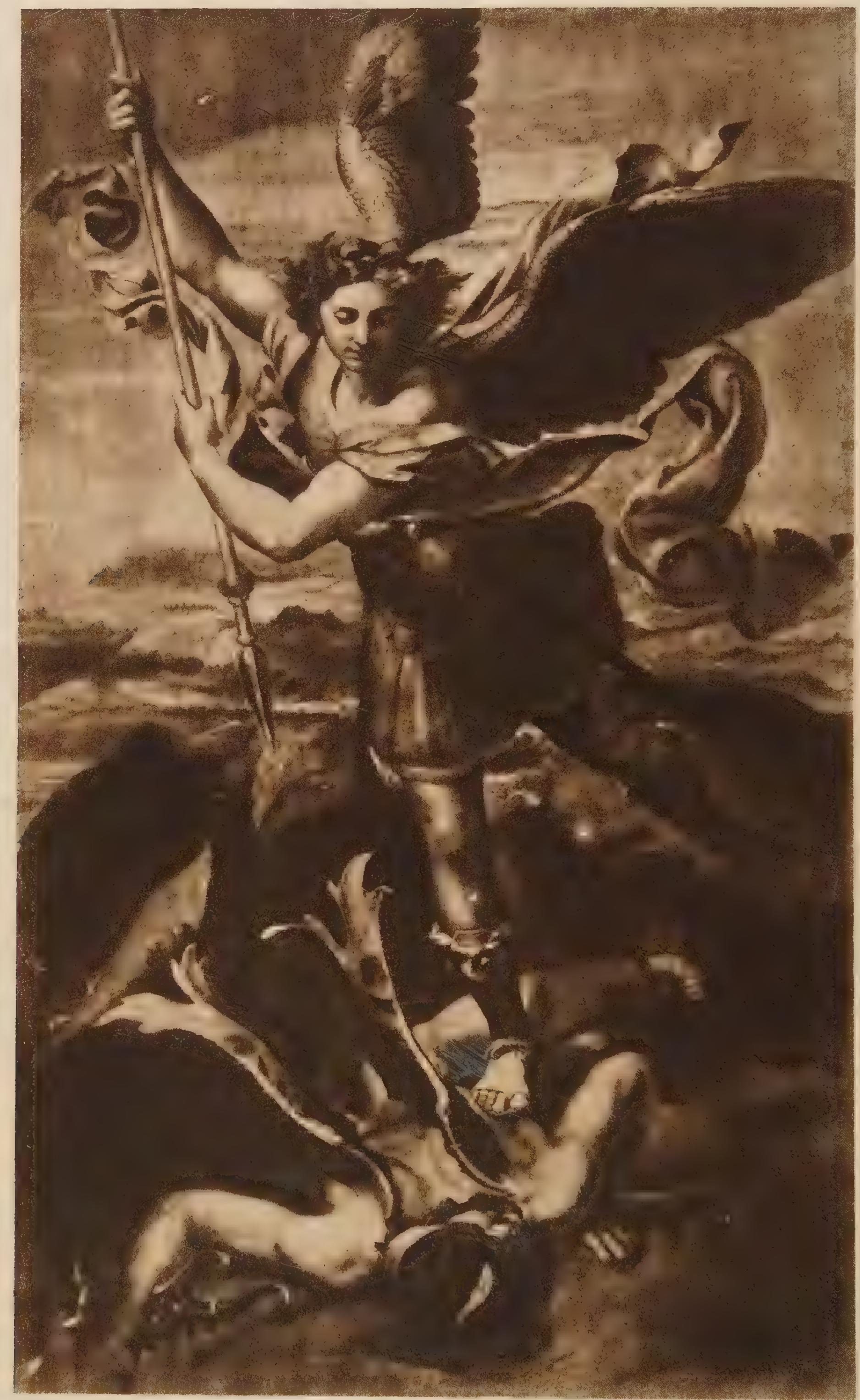
First we shall ascertain what records have been bequeathed to us in pictography. What conceptions of man's ultimate destiny in the "Conquest of the Air" do we find among the treasures in the Art Galleries and the Museums throughout the world? What have the Old Masters in painting and sculpture left behind them?

The first records on canvas are the masterpieces which interpret the mythology of ancient Greece and Rome (about 1100 B.C.), which we shall find antedated by archeological records and legends going back to 3500 B.C. The oldest of the Grecian tales, thus preserved, is that of *Daedalus and Icarus* which has been memorialized in stone and pigment and in the archives of literature.

This elemental life drama reveals itself in the works of Raphael, Rubens, Van Dyck and da Vinci, who is a progenitor of the Birth of the New Age. We see it take form as we stand before the genius of Rembrandt and Michelangelo. It appears continually in the spiritual conceptions of the Masters, in which they endow their figures with wings to symbolize the supernatural state of being. Little did these Old Masters realize that today we would be living in the age when "wings" are within reach of the entire human race, the common possession of all men—when flying is the heritage of mortals here and now, our endowment from the Scientists in a world where every human need is capable of ultimate realization.

Let us pass through the corridors and move down the ages toward the goal which we have reached today and witness, step by step, man's triumph over the elements—his stupendous victory in the age-long conflict.

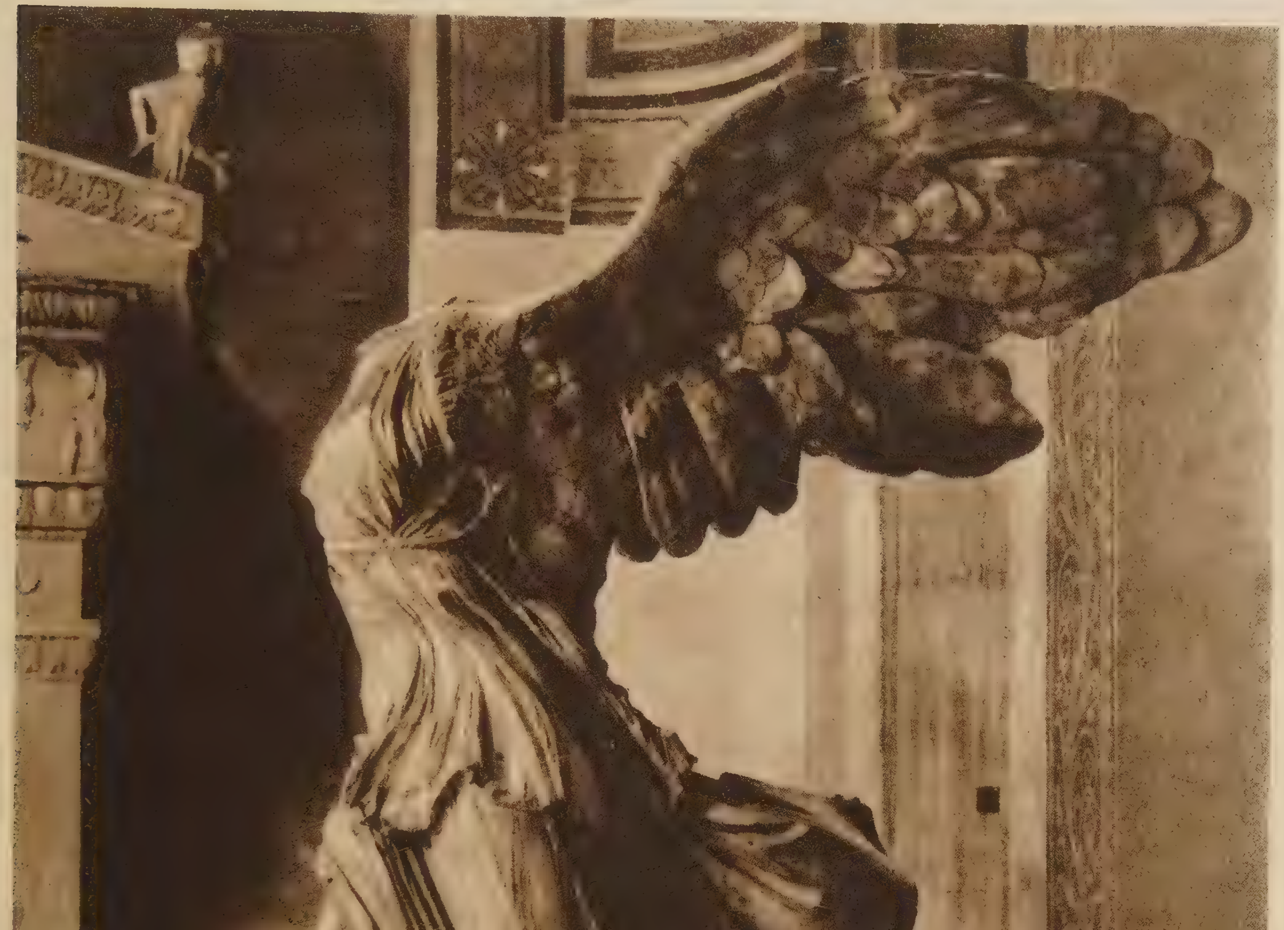
RAPHAEL'S "*Archangel Michael*"—ORIGINAL *in the* LOUVRE



© Collection of Braun and Co.

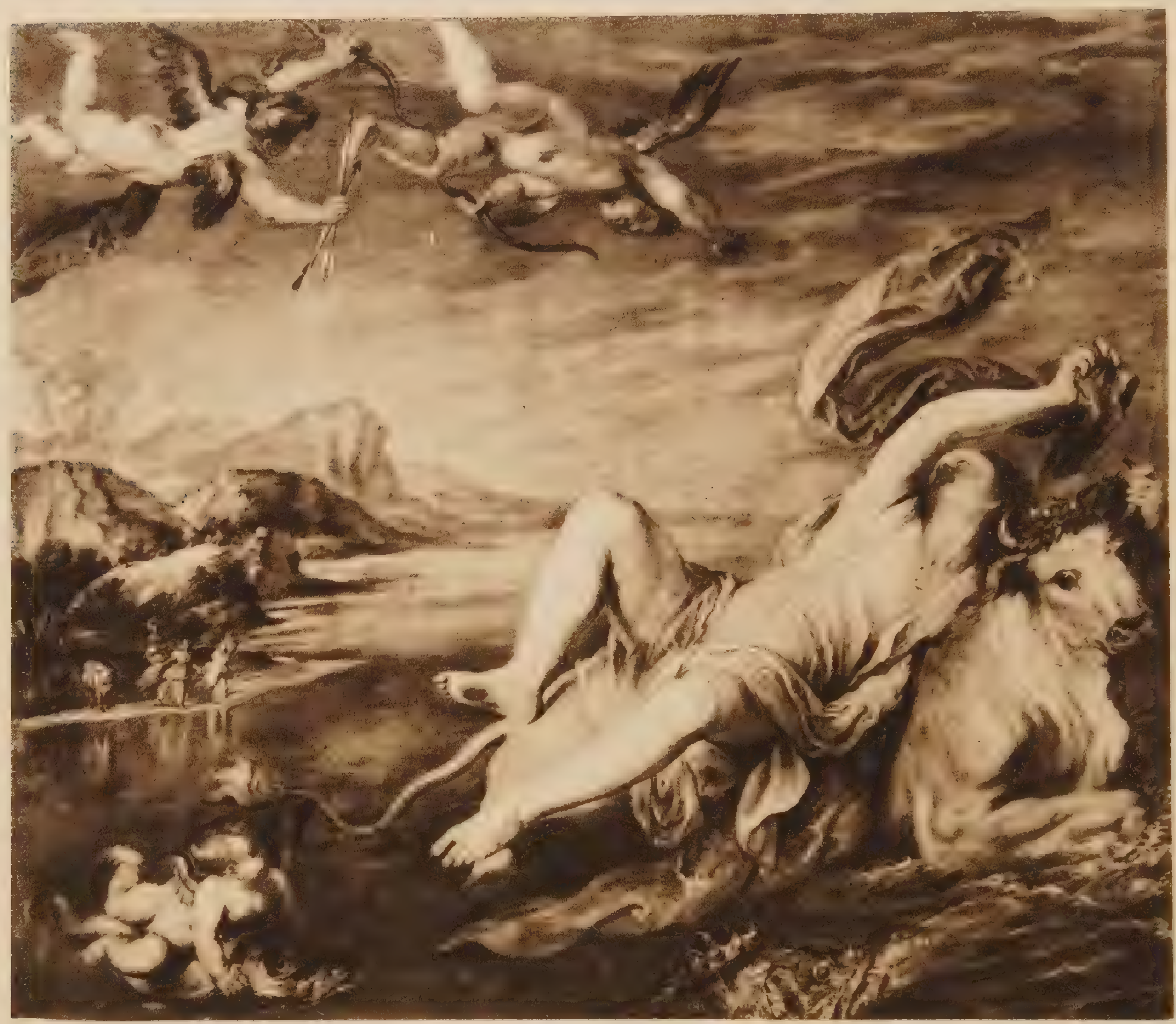
RAPHAEL SANZIO (1483–1520), pre-eminent among the World's Greatest Painters, has left us this masterpiece in which he immortalizes the story of "St. Michael and the Devil." It hangs in the Musee Nationale du Louvre in Paris.

"VICTORY *of Samothrace*"—*At Musee* NATIONALE *du* LOUVRE



AS far back as 305 B.C., we find the winged "Victory of Samothrace," ancient Greek sculpture, set up by Demetrius Poliorcetes near Mount Athos on the Island of Samothrace in the Aegean Sea. It is now one of the great treasures in the Louvre in Paris.

RUBENS' "*Rape of Europa*"—*Original in* PRADO *at* MADRID



Romance of the Gods

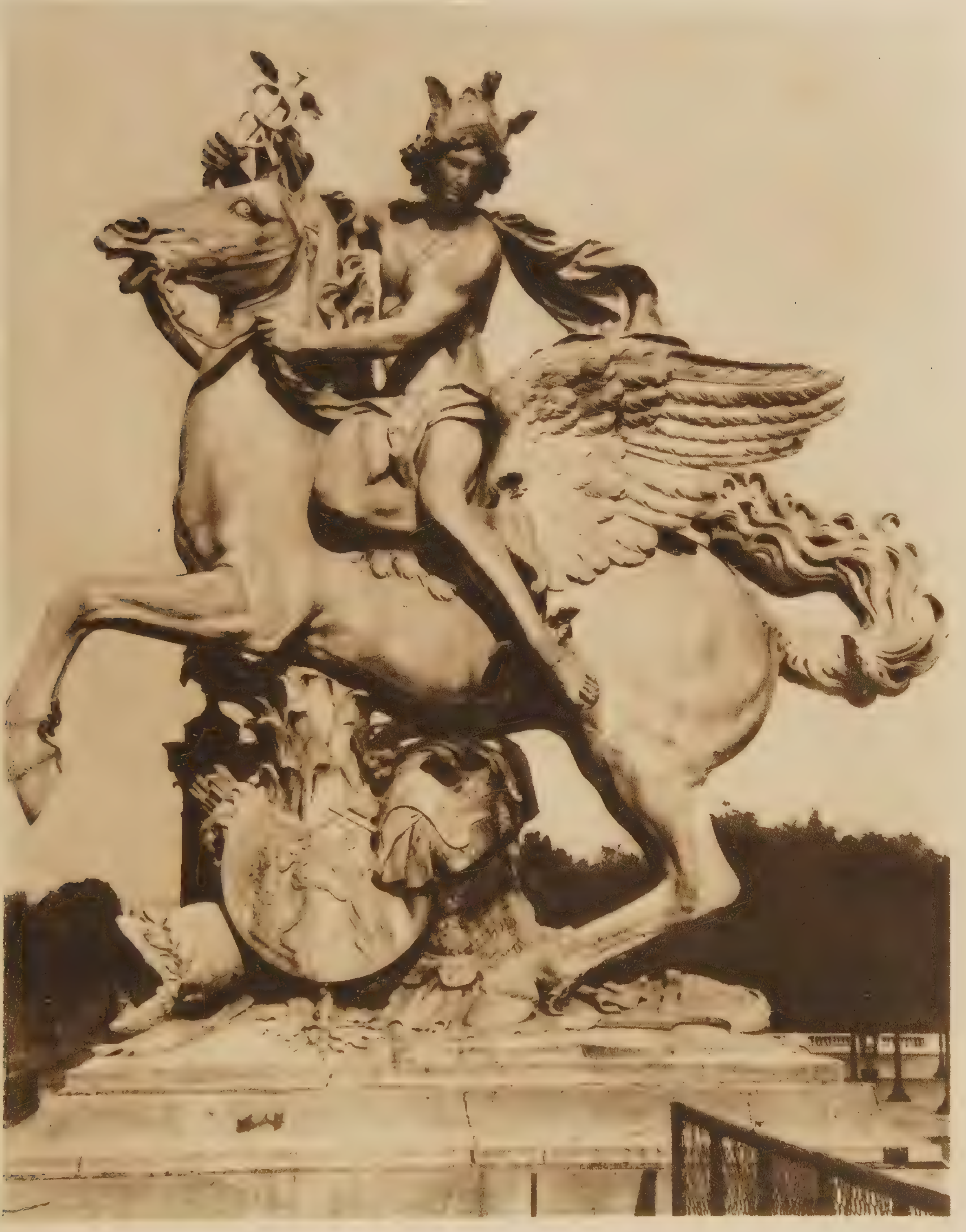
IN the Museo National del Prado in Madrid, we look upon the masterpiece of Peter Paul Rubens (1577–1640), the "Rape of Europa," with its flying cherubim. Rubens, as a Flemish painter, was a favorite in the Court of Spain about the time of the Landing of the Pilgrims at Plymouth Rock on the shores of America.

Europa, whose name means "white," and for whom the continent of Europe is named, was the daughter of the Phoenician King Agenor and the nymph Mella. Cadmus, the inventor of letters, was her brother.

The exquisite beauty of Europa won the heart of Jupiter himself, who, with his power of flight, came down from his ethereal throne and transformed himself into a milk-white bull, appearing on the shore where Europa strolled with other maidens.

The animal's gentleness caused the enchanted Europa to venture upon its back, whereupon he plunged into the sea and swam away with his lovely prize to the Island of Crete.

"PEGASUS"—*At Tuileries, Place de la* CONCORDE *in* PARIS



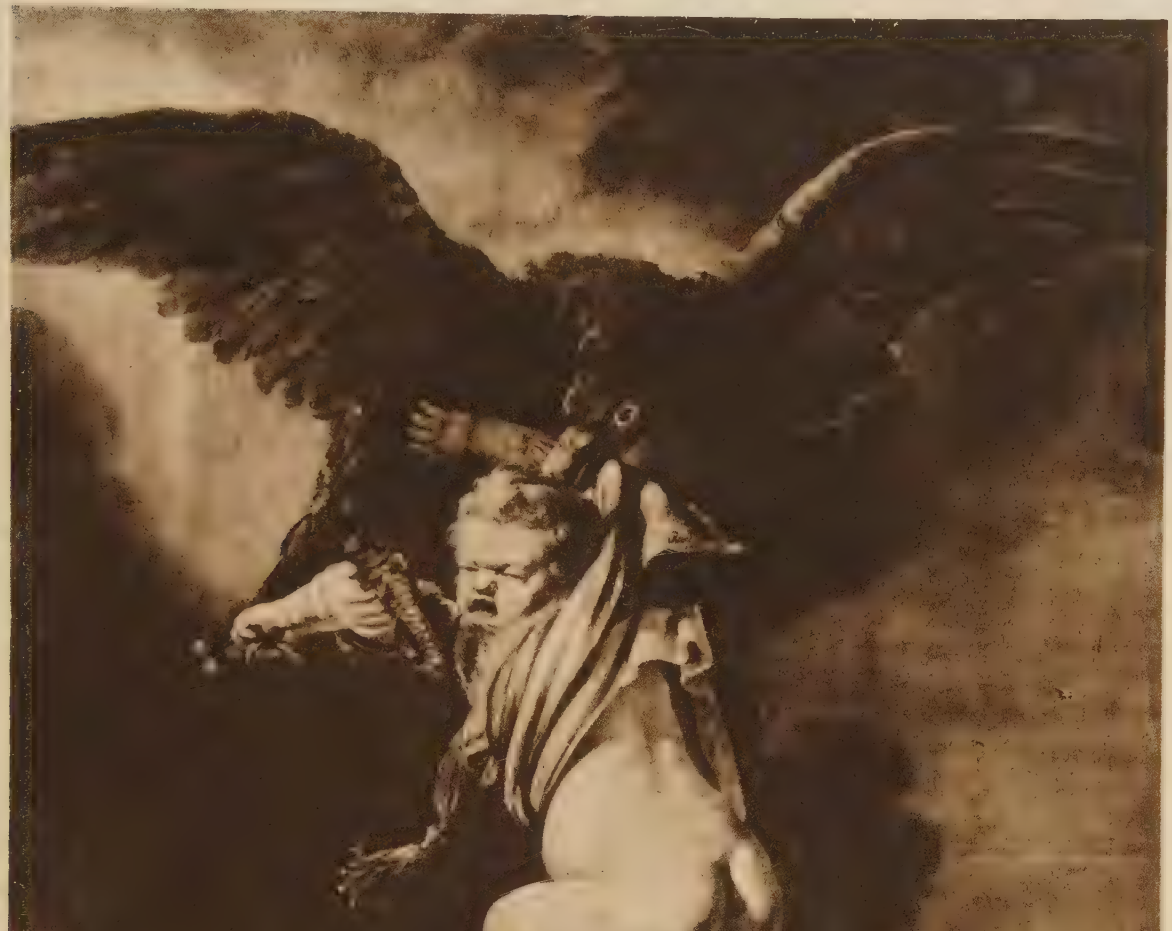
THE finest exhibit in the world today of the Winged Horse of Grecian mythology (1100 B.C.) is this "Puck on Pegasus," by Charles Antoine Coysevox, which has stood for two centuries in the Garden of the Tuileries, at the entrance to the Place de la Concorde, in Paris.

DA VINCI "*Annunciation*" *in* UFFIZI *Gallery at* FLORENCE

WE shall see in these pages how at the time of the Discovery of America, Leonardo da Vinci (1452–1519), the great Italian painter, sculptor, architect, musician, mechanician, engineer and natural philosopher, gave to the world its first plans for a flying machine and parachute. In the Uffizi Gallery in Florence, Italy, we find this winged masterpiece of "The Annunciation."

In the National Gallery in London, is this triptych by Pietro Perugino (1450–1524) of the "Archangel Michael," the "Virgin Adoring the Christ Child", and "St. Raphael and Tobias," the three forming one of six parts of Perugino's "Madonna and the Saints", painted in 1500 for the Certosa of Pavia, Italy. He was a contemporary of Christopher Columbus.

REMBRANDT *Masterpiece "Ganymede"—Original in* DRESDEN



THIS masterpiece by Rembrandt van Rijn (1606–1669) might well be established historically as the "Patron Saint of the World's Aviators." It illustrates the immortal story of "Ganymede," in Grecian mythology, as he is borne into the clouds by an eagle.

GRECIAN MYTHOLOGY *at* METROPOLITAN *Museum*

WE present here three paintings in the Metropolitan Museum of Arts in New York which preserve the ancient legends of flight.

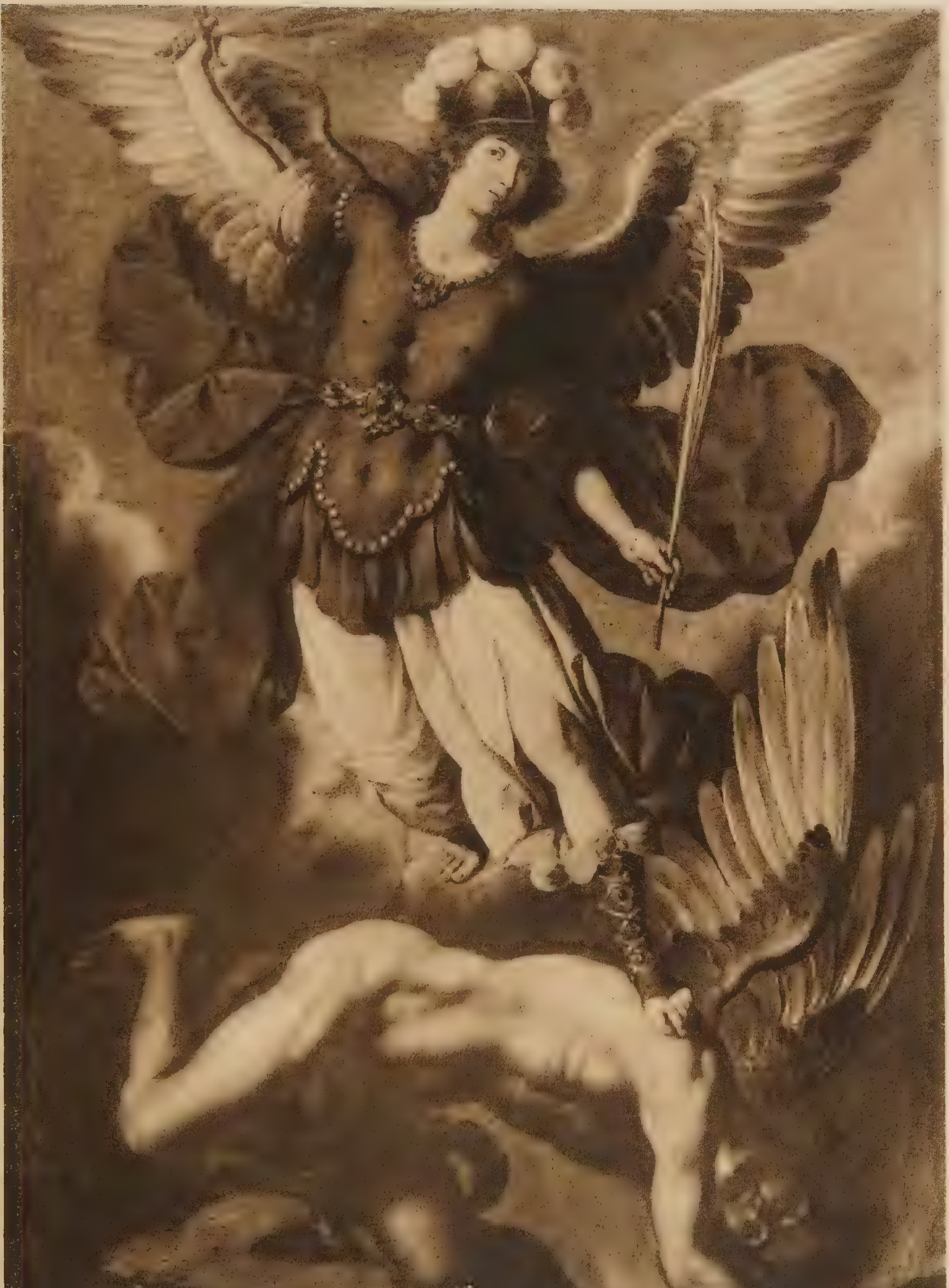
On the left is the Grecian tale of "Oedipus and the Sphinx as conceived by Gustave Moreau, a French painter. Oedipus, son of King Laius of Thebes, according to Homer's Odyssey, was banished in childhood by his father and adopted by Polybus, King of Corinth. When grown, he returned to Thebes in ignorance of his real paternity and unwittingly killed his own father and married his mother, the widowed queen.

Thebes was plagued by the wicked Sphinx, a winged monster with the head of a woman, who asked all passers-by a riddle. When they could not answer, the winged monster killed them. Oedipus solved the riddle and the Sphinx killed herself in disgust. Later his mother-wife learned the true facts of his birth and hanged herself.

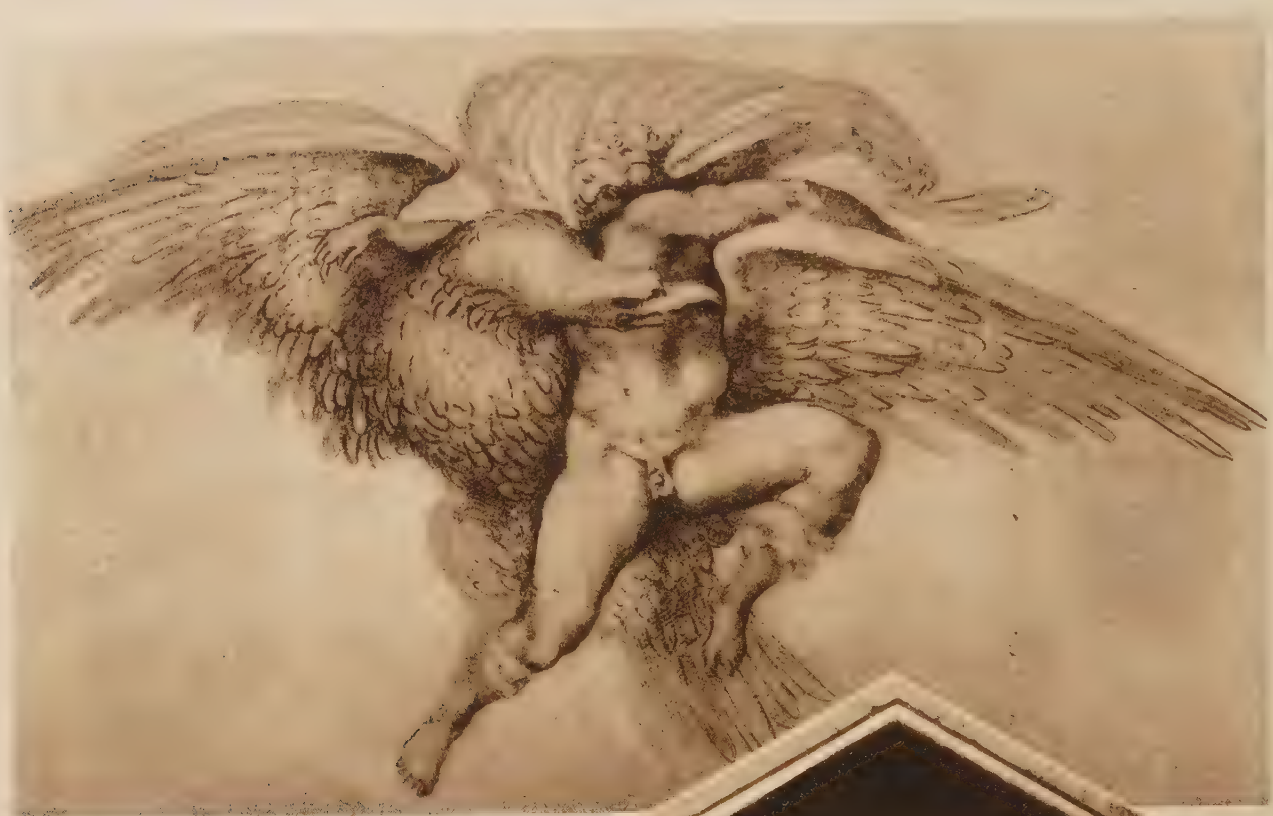
Another version of the Scriptural Record of "St. Michael, the Archangel" (on the opposite page) is of the Spanish school and attributed to Francisco Zurbaran.

The heroic legend of "Perseus Coming to the Rescue of Andromeda" on his flying horse is interpreted by an artist of the French school. (Right) The story is told on page 43.

SPANISH *Conception of* "ST. MICHAEL"—*At the Metropolitan*

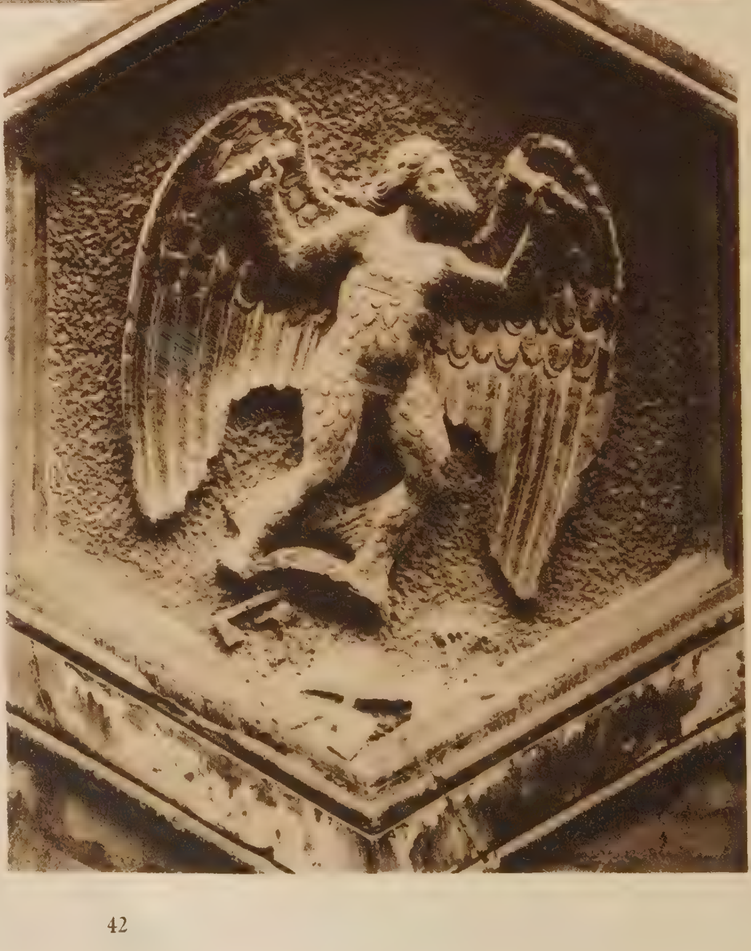


MICHELANGELO *Drawing in* ROYAL WINDSOR *Library*



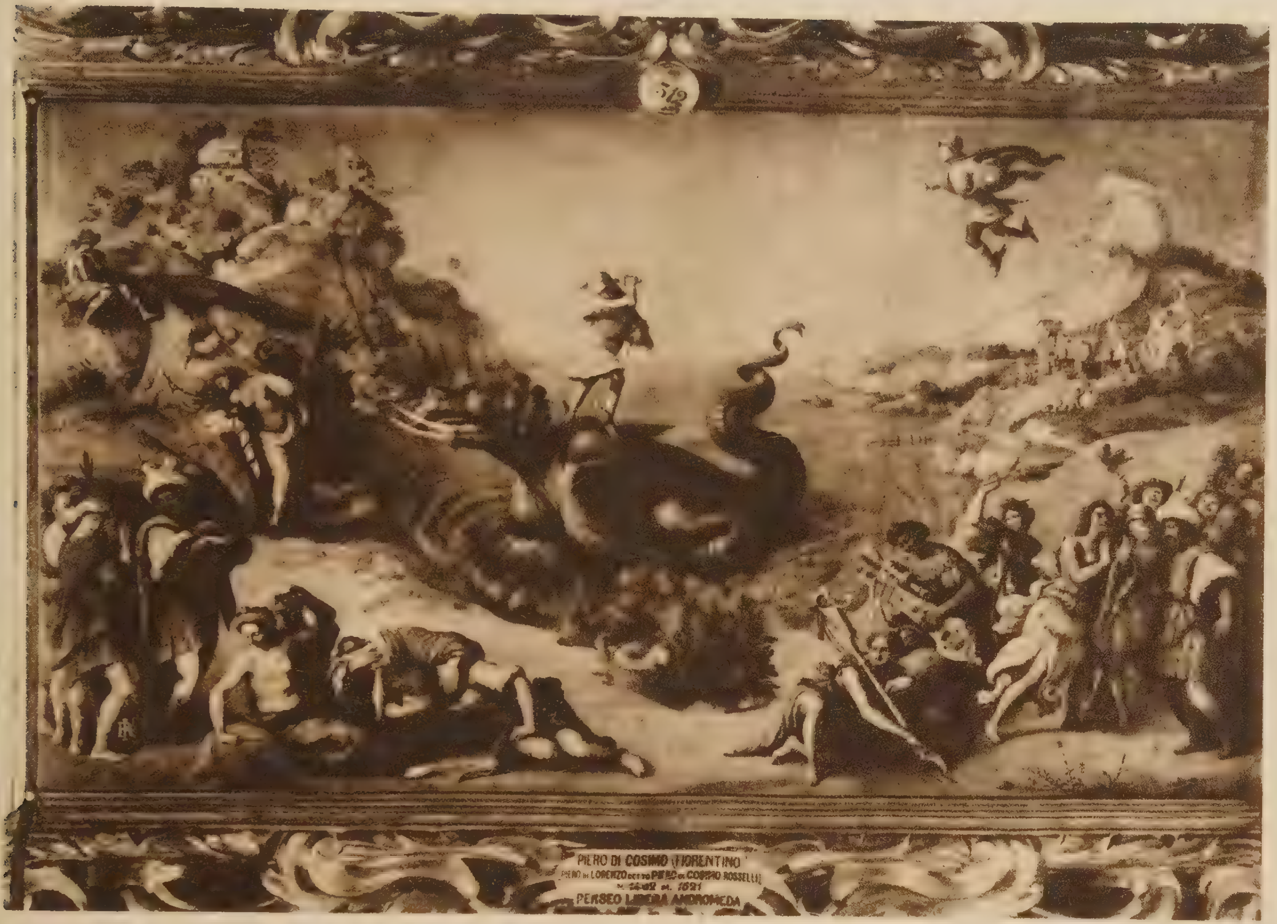
HERE, in the Royal Windsor Library, in London, we find Michelangelo (1475-1564) with his conception of the Grecian legend of "Ganymede and the Eagle." It is a charcoal sketch by the most famous of the Florentine artists of the Renaissance. Michelangelo is another of the Italian group of Masters living at the time when da Vinci gave to the world the first designs for a "Flying Machine," and Columbus was on his great adventures in the Western World.

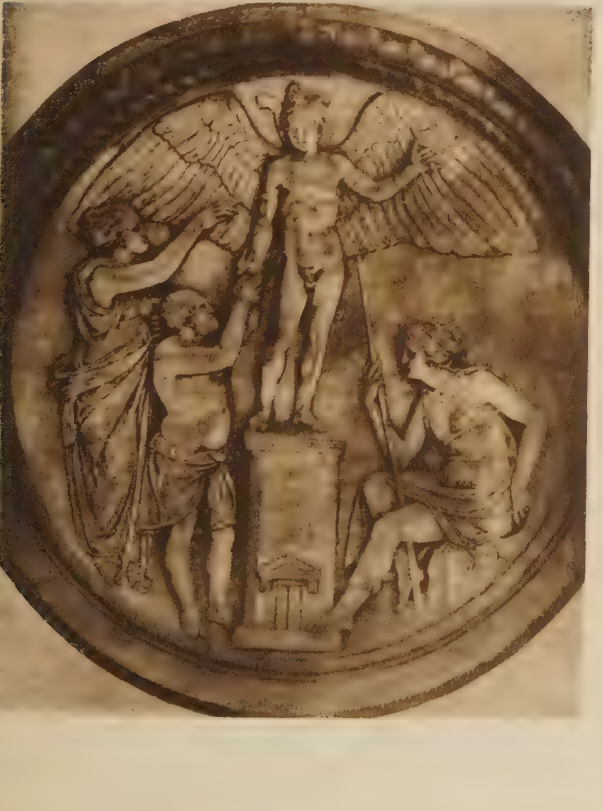
Father of Human Flight



This Bas Relief of "Daedalus," the "Father of Human Flight," has stood for more than six centuries on the incomparable campanile of the Church of Santa Maria del Fiore in Florence, Italy. The bell tower was designed and partly executed by the famed Italian painter, Giotto (1267-1337), sculptor as well, who in his last years was City Architect of Florence.

"PERSEUS *and Andromeda*"—*In the* UFFIZI *Gallery, Florence*


PIERO DI COSIMO (FIORENTINO)
PIERO di LORENZO detto PIERO di COSIMO ROSSELLI
n. 1462 m. 1521
PERSEO LIBERA ANDROMEDA



Legend of the Winged Sandals

IN the Uffizi Gallery, in Florence, we view still another version of the tale of Perseus flying to the rescue of Andromeda. This painting is by Piero di Cosimo (1462-1521), Florentine painter noted for his fantastic imagination.

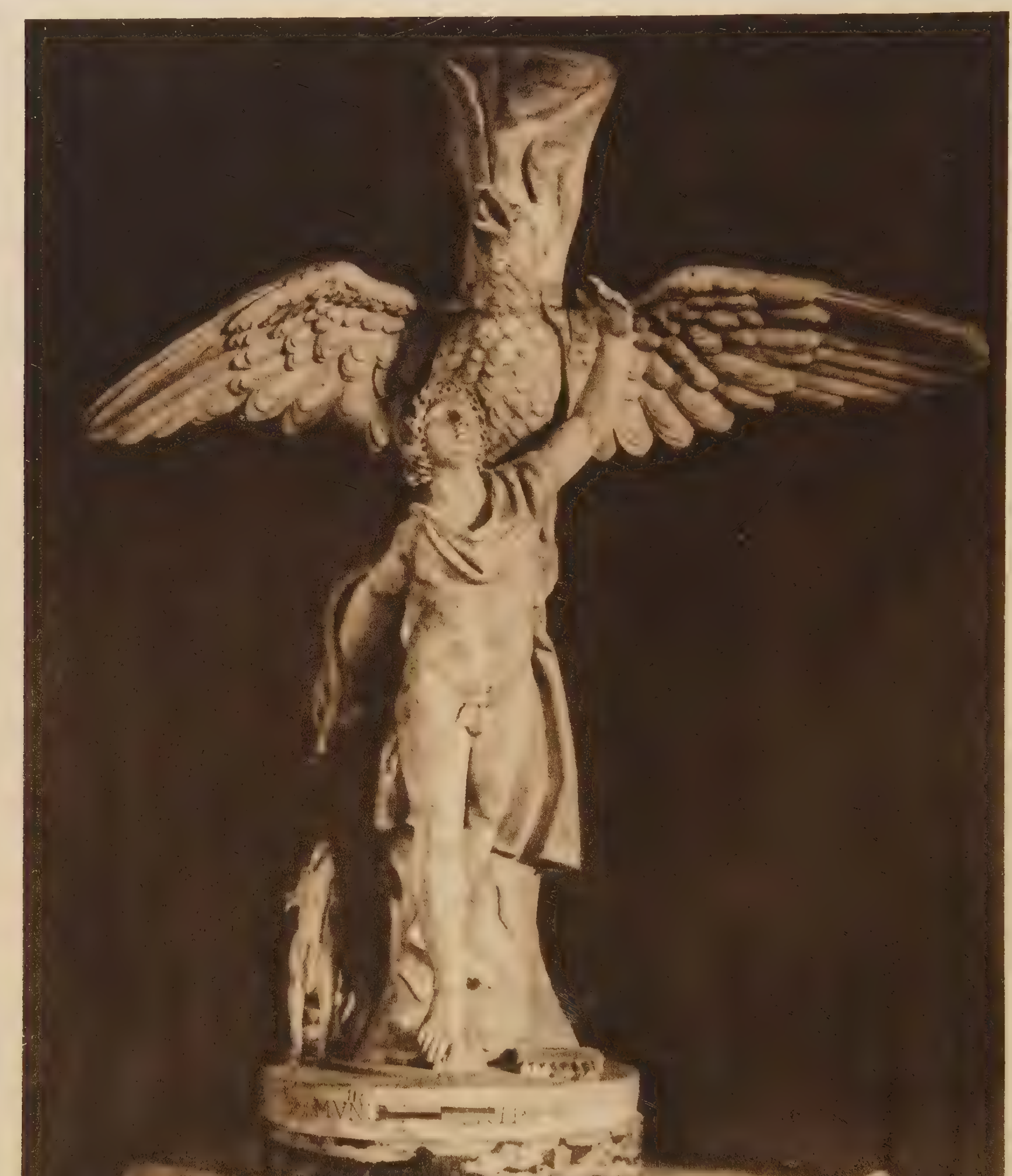
The "winged sandals" of Perseus enable him to traverse the sky. Guided by Hermes and Athena, Perseus, son of Zeus himself, comes to the Graeae, three hags with but one eye and one tooth between them.

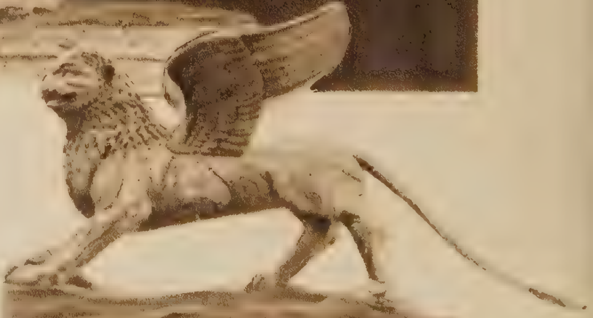
Perseus steals both eye and tooth and restores them only when the Graeae bestow on him the winged sandals, a huge wallet, and the helmet of Hades which makes the wearer invisible.

He flies to the abode of the Gorgons, sisters of the Graeae, who on their terrible heads wear snakes for hair. Cutting off Medusa's head while she sleeps, he flies by air to Ethiopia, where he arrives just in time to rescue Andromeda from a sea-monster. He soars away with the lovely maid in his arms and she later becomes his bride.

Donatello (1386-1466), the Italian sculptor, also pictured the boy Icarus of the ancient Greek flying myth of Daedalus and his son. We see him poised ready to fly in this sculpture in the galleries of the Palazzo Riccardi in Florence.

GREEK *Sculpture in the* VATICAN—"*Ganymede and the* EAGLE"

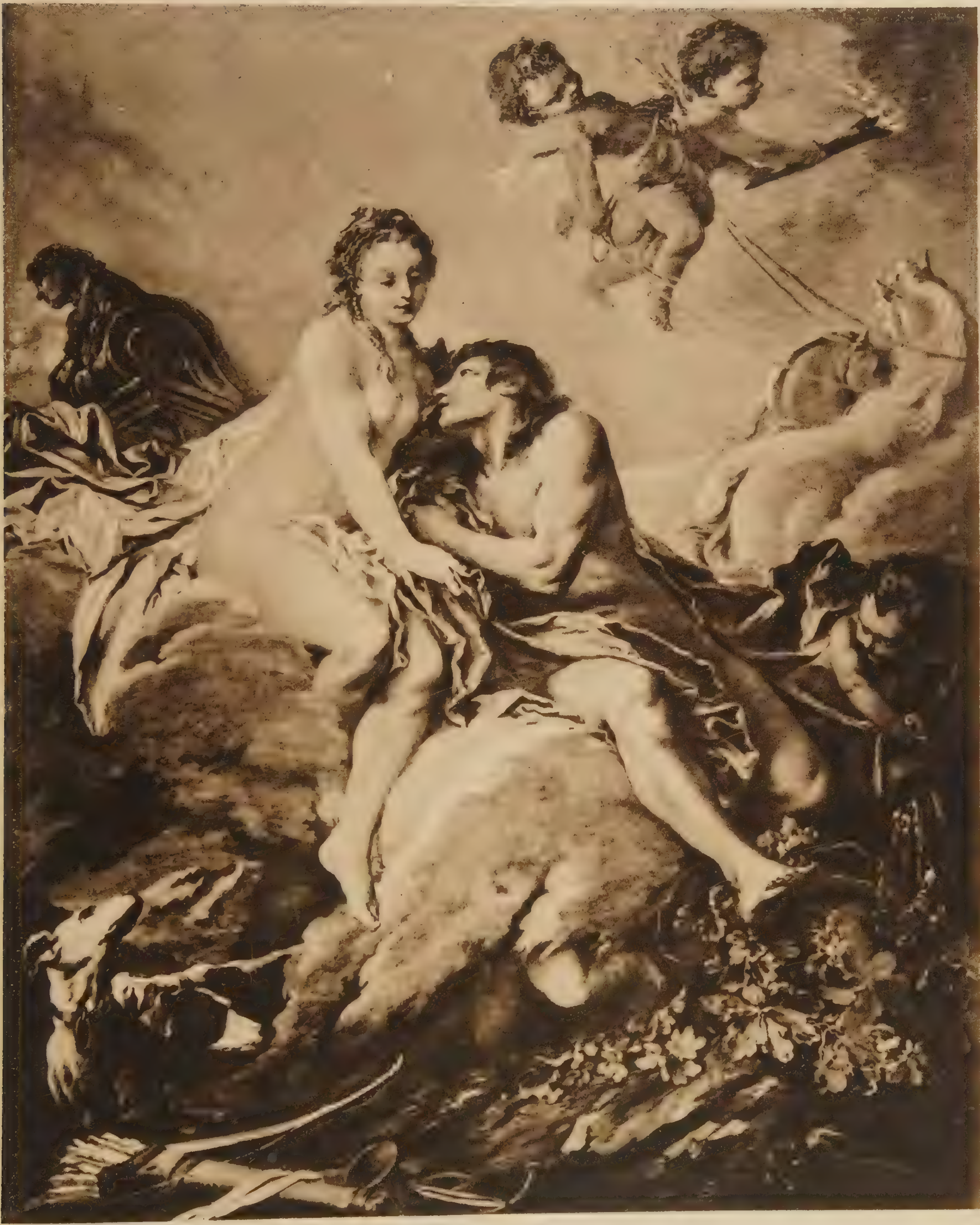




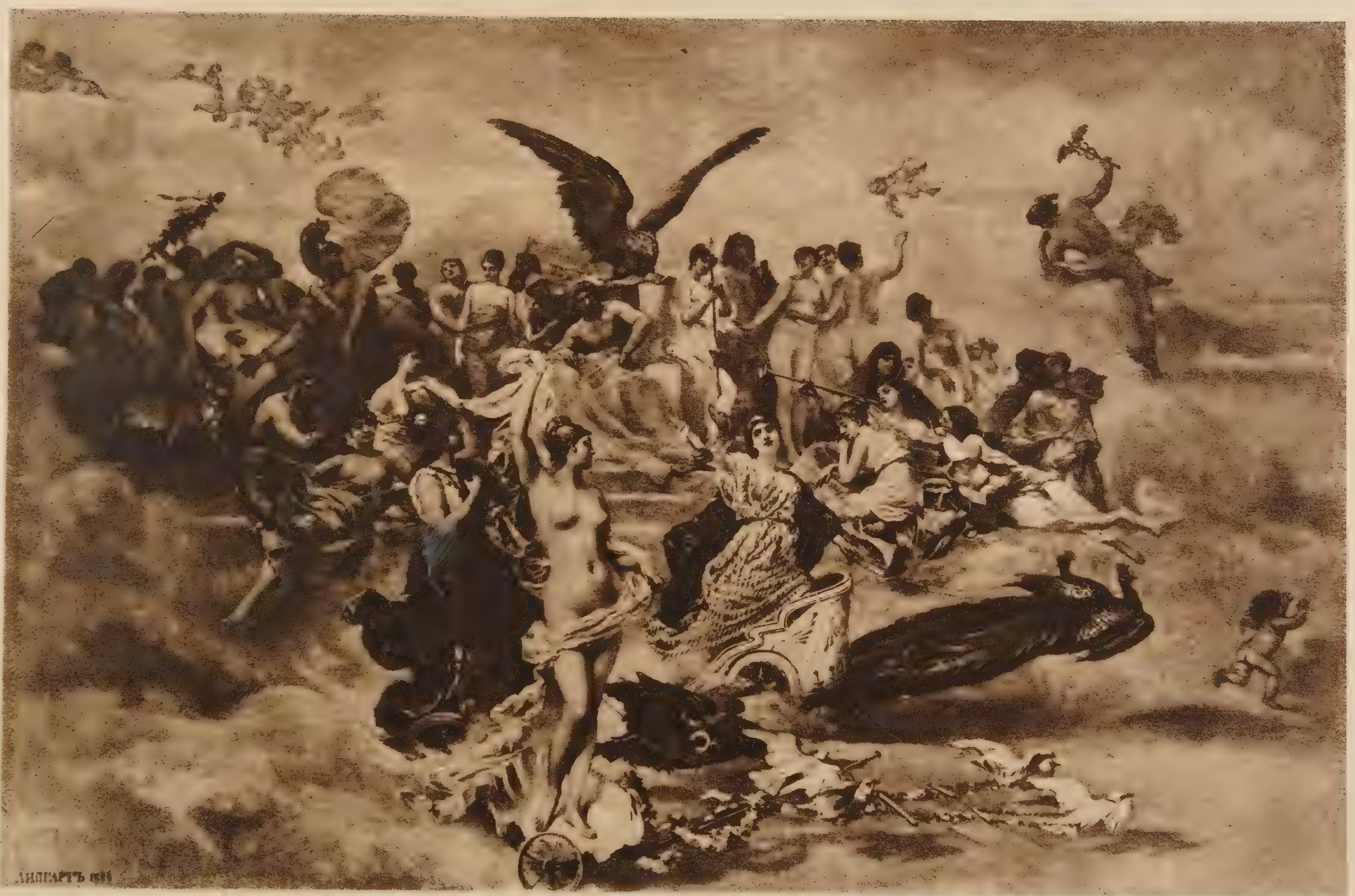
AMONG the treasures of Art in the Vatican Gallery, in Rome, we come again upon "Ganymede and the Eagle," by an unknown Greek sculptor several centuries before Christ.

Those who have visited Venice will recognize this "Winged Lion of St. Mark's." It stands at the top of towering marble pedestals which have guarded the plazá before the historic Church of St. Mark's for nearly a thousand years.

"ABDUCTION *of* AURORA" *in the Museum at* NANCY—*Boucher*



HERE, in the Museum at Nancy, is the Aerial Chariot of Aurora, Roman Goddess of the Dawn, in which she is being borne away by her lover, Orion, with the winged horses, Lampus and Phaethon. This painting is by Francois Boucher, court painter to Louis XVI of France.



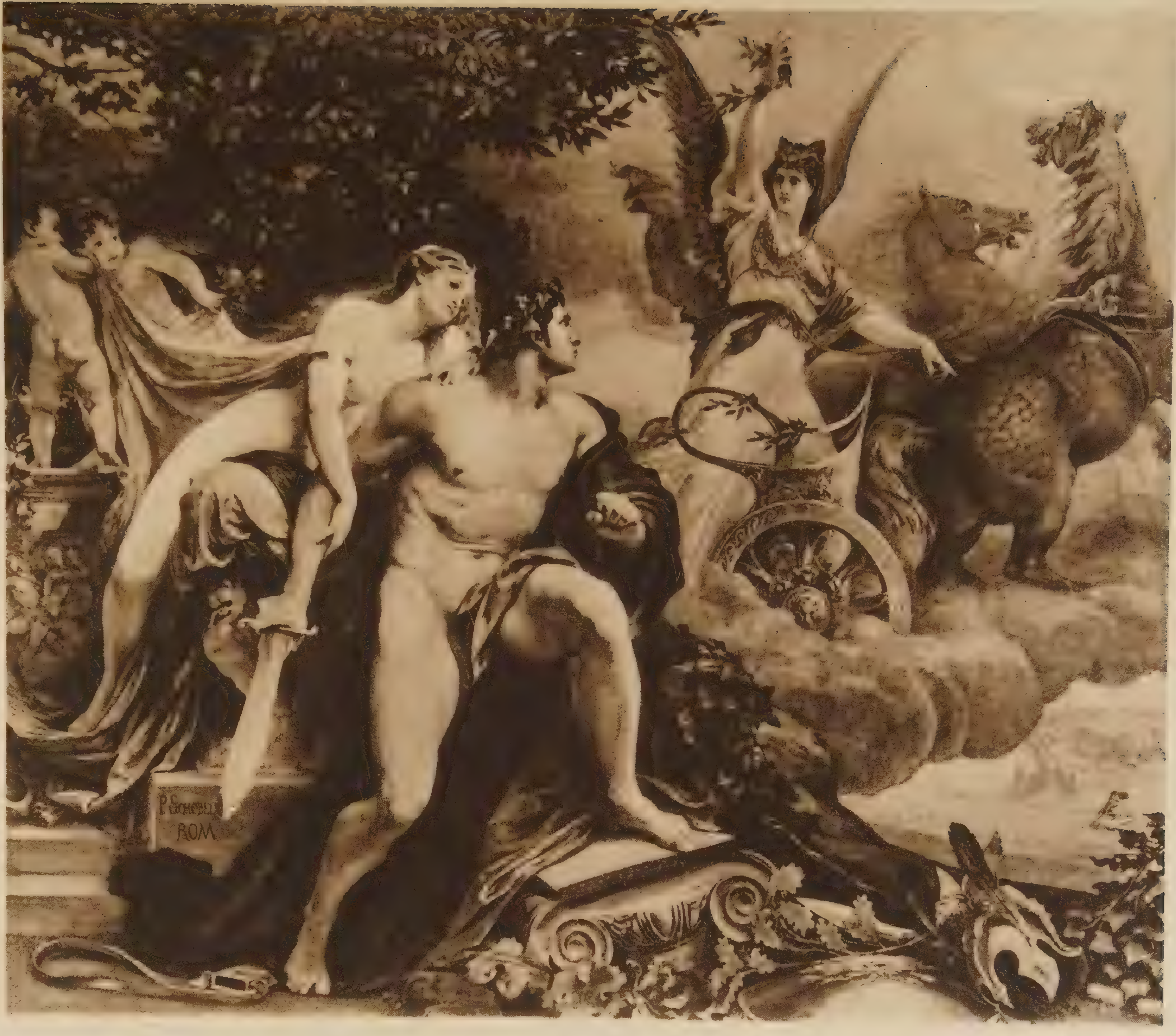
The WINGED GODS *of Mount* OLYMPUS—*Painted by Liphart*

Grecian conception of Chariots drawn through the clouds by peacocks and doves.

“VENUS
and
BELLONA”

Bellona, Greek Goddess of War, appears in her winged equipage to recall the mighty hunter, Orion, from the arms of Venus,—in this painting by Paul Schobelt.

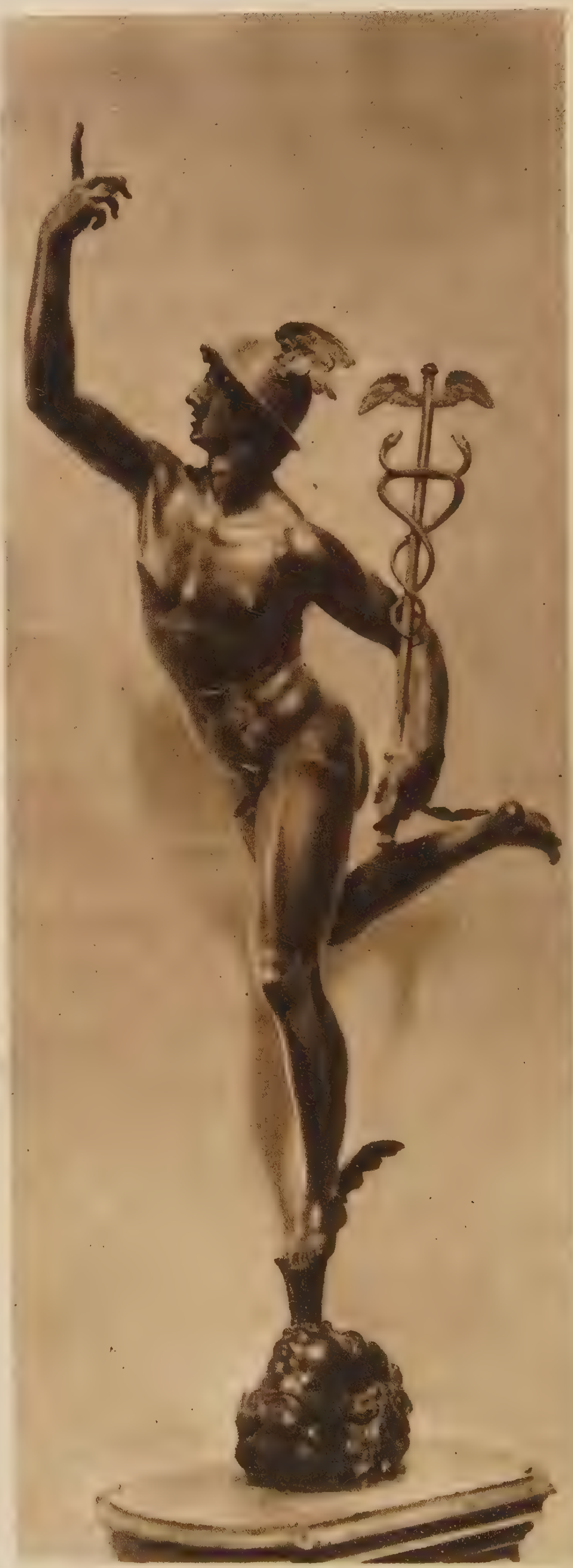
NATIONAL
GALLERY
in BERLIN



"MERCURY"—*In the* MUSEO NAZIONALE *at* FLORENCE, *Italy*

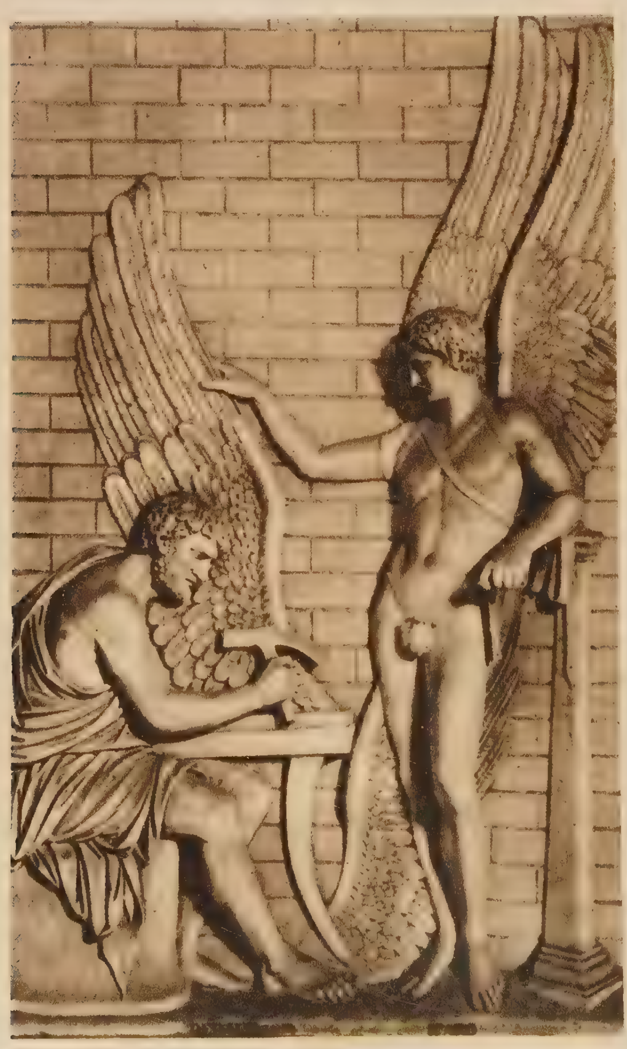
THE First Winged Messenger is the Greek Hermes, (the Roman Mercury). Praxiteles (364 B.C.), the sculptor, made him a lithe young athlete with winged feet.

Giovanni di Bologna, Flemish sculptor of many fine works, is perhaps best known for this beautiful Mercury in bronze (right) in the Bargello Gallery of the National Museum in Florence.

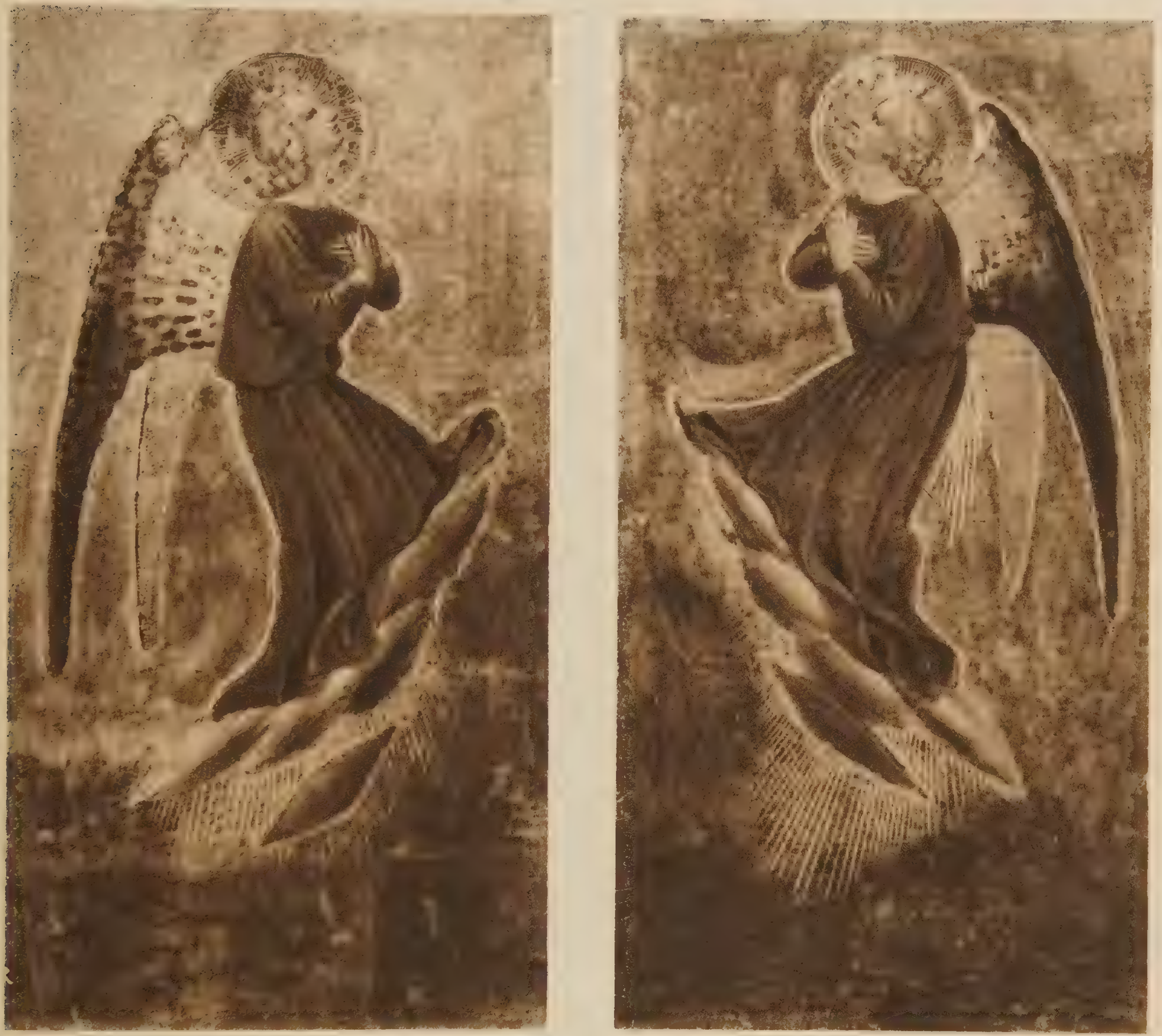


Daedalus and Icarus

In the Collection in the Villa Albani, in Rome, we discover this beautiful conception of Daedalus (below). Having finished and fitted the wings of his son, Icarus, he is here fabricating his own wings for the first tragic flight in the records of Greek mythology.



Originals in NATIONAL *Gallery, London--Pinecateca,* TURIN



WINGED ANGELS OF THE PAINTER PRIEST, FRA ANGELICO

THE conception of a Winged Paradise, in which all mortals would be given the power of flight in their transmigration, has been the assurance of all religions throughout the ages.

Fra Giovanni Angelico da Fiesole (1387–1455), noted among the Italian Old Masters, makes constant use of wings in his works, which were devoted solely to sacred subjects. He firmly believed in an ethereal world of winged immortality.

Offered the Archbishopric of Florence by Pope Eugenius IV, he preferred to continue as a simple friar illustrating the acts of Christ by his talented brush. He never painted except with fervent prayer.

The masterpiece shown here of the "Adoring Angels," one of the finest examples of his work, is in the Pinecateca in Turin, Italy.

Sir Charles Holmes, of the National Gallery, London, says of Fra Angelico: "The legend of his saintly life, the happy serenity and simplicity of his temper, tend to distract our attention from his greatness as an artist. When his theme gave him the necessary scope, he attained to power and sublimity which never have been surpassed."

DORE'S *Famous Painting of* ELIJAH *in* CHARIOT *of* FIRE

THE First Biblical Record of Human Flight appears in the Book of Kings, when Elijah was carried up to Heaven from the bank of the River Jordan before the wondering eyes of Elisha, his successor: "And, behold, there appeared a chariot of fire, and horses of fire, and parted them both asunder; and Elijah went up by a whirlwind into Heaven."—II Kings, 2:11.

PART II

HUMAN FLIGHT *in the* WORLD'S LITERATURE

Records Found in FIRST EDITIONS *of* RARE BOOKS *in Libraries*

OUR search now takes us into the archives of Human Knowledge. Here, in the World's Libraries, we delve into the written record. Wings—wings everywhere! Man's aspirations to fly are expressed in his religion, his philosophy, and his imaginative literature; from the ideographs of ancient China, the hieroglyphics of Egypt, the Arabian symbols which gave us our alphabet, the Hebraic scrolls, the manuscripts of the Greeks and the Latins.

We shall observe the Chinese bamboo records and the Babylonian seal cylinders in our archeological explorations. For the moment let us consider what we call literature.

The Chinese invented printing, centuries before it was used in the Western World—and printing is "the basic art of civilization without which civilization itself could not exist in its present form."

The first mention of human flight in the Hebrew records is found in the Book of Kings (896 B.C.) where it is recorded that "Elijah was taken to Heaven in a Chariot of Fire." Again we find in the anthology of Hebrew poets, known as the Psalms (1050 B.C.) the lines, "He rode upon a cherub and did fly; yea, he did fly upon the wings of the wind."

The most ancient record in the Greek manuscripts is that of Homer (940-850 B.C.) in the Iliad. The epics of the Greeks give the power of flight to their gods and heroes. Aeschylus (525-456 B.C.) discussed human flight; also Pindar (518 B.C.) and Euripides (480-406 B.C.)

It is known that Herodotus (484-443 B.C.), the first historian, weighed these problems and that Euclid (300 B.C.) and Archimedes (287-212 B.C.) the inventors of mathematics, gave them scientific consideration. Socrates (470-399 B. C.) and Plato (429-347 B. C.) were thoroughly acquainted with the "question of the times."

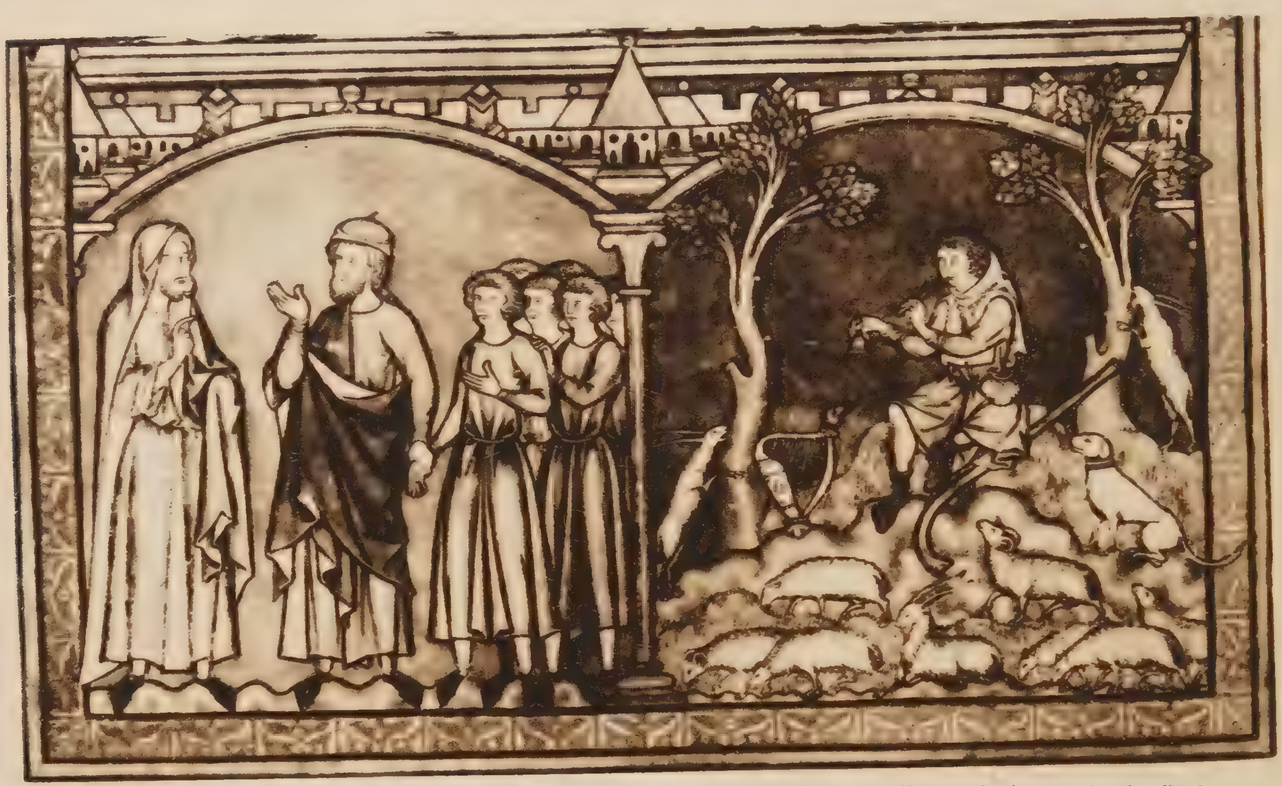
Records have recently been discovered which present claims that King Solomon (974 B.C.) was the first man to contrive successfully a vehicle whereby one could traverse the air. The authority for this priority claim is "*The Kebra Nagast*," being a History of the Departure of God and His Ark of the Covenant from Jerusalem to Ethiopia.

The oldest of the English records is that of Bladud, King of Britain (863 B.C.), which we present in facsimile on page 90. The first printed statement of scientific exposition is that of Roger Bacon (1250 A.D.) as exhibited on page 96.

The Latins made frequent references to Man's Conquest of the Air. It was in the mind of Plautus (254-184 B.C.), Cicero (106-43 B.C.), Julius Caesar (100-44 B.C.); and of Horace and Ovid in the beginning of the Christian era.

Throughout this volume we present many facsimiles of documents in which it will be seen that the idea of human flight has been recorded by Shakespeare, Milton, Samuel Johnson, Thackeray, Tennyson, and through the literature of the ages; until at last it entered the laboratory of the scientists and became the actuality which we are witnessing today.

ANCIENT *Illumination in* MORGAN COLLECTION—1250A.D.



THE rhapsodic word pictures in the Psalms of David contain many references to wings in human and divine flight.

In the Illuminated Record here shown, we see the boy David tending the flocks of his father, Jesse, while he sets his inspired poetry to music.

The Prophet Samuel comes to David's father with the request that he be permitted to attach David to his court as a singer of songs.

These pictures come from a beautifully Illuminated French Manuscript of the Thirteenth Century, which was presented by the Polish Cardinal Bernard Maciejowski to Shah Abbas the Great, King of Persia.

This illuminated manuscript is now in the Morgan Collection in New York.

"David Before Saul" by Lucas van Leyden, executed by the noted wood engraver in 1530, is shown on the left.

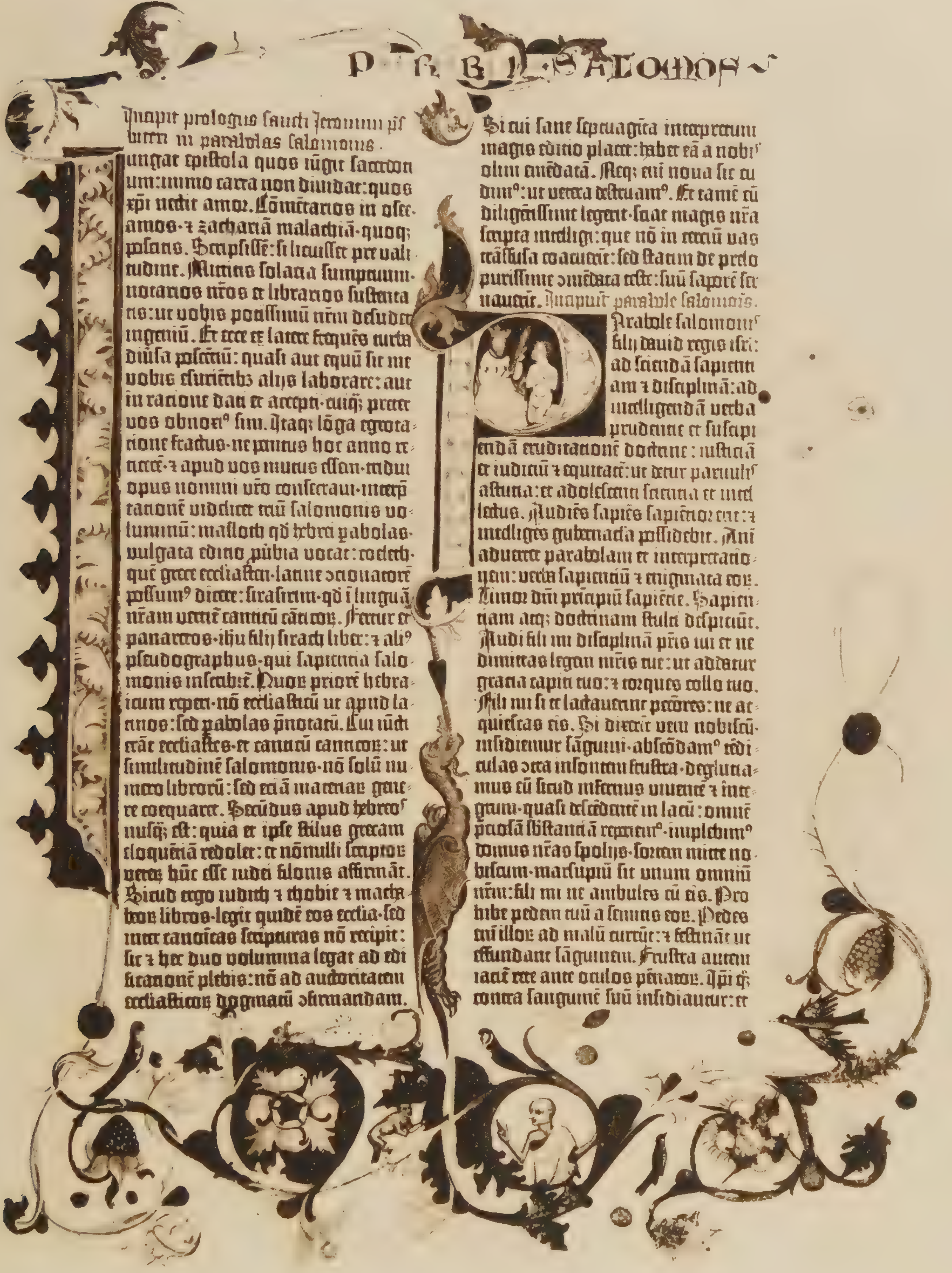
Below is a line of Hebrew text of the XVIIIth Psalm with its English translation in the verse of Sternhold and Hopkins.

וַיִּרְכַּב עַל־כְּרוּב וַיָּעֹף וַיֵּרֶא עַל־כַּנְפֵי רוּחַ

—PSALM XVIII. 11 *Hebrew Bible*, ver. 10

On Cherubim and Seraphim
Full royally he rode,
And on the wings of flaming winds
Came flying all abroad.

—PSALM XVIII., *Sternhold and Hopkins's*

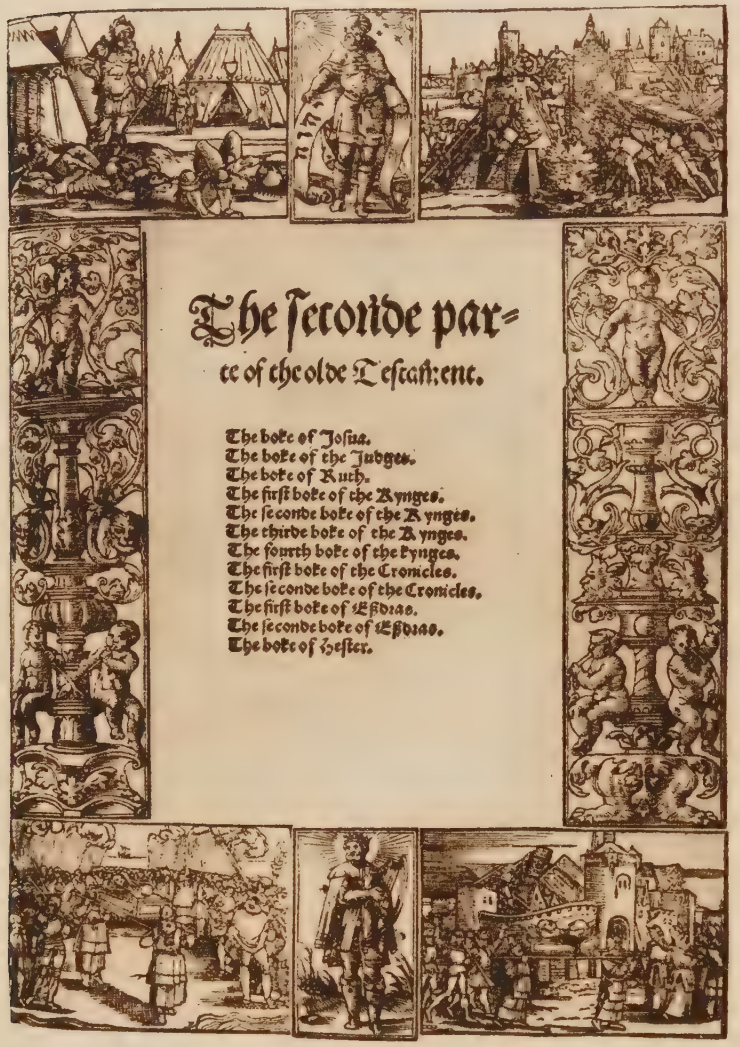


PARABOLE SALOMON

Incipit prologus ſancti Jeronimi pſ
biteri in parabolas ſalomonis.
Iungat epiſtola quos iūgit ſacerdoti
um: immo carta non diuidat: quos
xp̄i nectit amor. Cōmētarios in oſee.
amos. ⁊ zachariā malachiā. quoq;
poſcitis. Scripſiſſē: ſi licuiſſet pre vali
tudine. Mittitis ſolacia ſumptuum.
notarios nr̄os et librarios ſuſtenta
tis: ut vobis potiſſimū nr̄m deſudet
ingeniū. Et ecce ex latere frequēs turba
diuſa poſcentiū: quaſi aut equū ſit me
vobis eſurientibꝫ alijs laborare: aut
in ratione dati et accepti. cuiq; preter
vos obnoxi⁹ ſim. Itaq; lōga egrota
tione fractus. ne penitus hoc anno re
ticerē. ⁊ apud vos mutus eſſem. tridui
opus nomini vr̄o conſecraui. interp̄
tationē videlicet triū ſalomonis vo
luminū: maſloth qd̄ hebrei pabolas.
vulgata editio pūbia vocat: coeleth.
quē greci eccliaſten. latine cōcionatorē
poſſum⁹ dicere: ſiraſirim. qd̄ ī linguā
nr̄am vertitē canticū cāticorū. Fertur et
panaretos. iheſu filij ſirach liber: ⁊ ali⁹
pſeudographus. qui ſapiētia ſalo
monis inſcribit̄. Quorū priorē hebra
icum reperi. nō eccliaſticū ut apud la
tinos: ſed pabolas p̄notatū. Cui iūcti
erāt eccliaſtes. et canticū canticorū: ut
ſimilitudinē ſalomonis. nō ſolū nu
mero librorū: ſed etiā materiaꝝ gene
re coequaret. Secūdus apud hebreos
nuſq; eſt: quia et ipſe ſtilus grecam
eloquētiā redolet: et nōnulli ſcriptorū
veterꝫ hūc eſſe iudei filonis affirmāt.
Sicud ergo iudith ⁊ thobie ⁊ macha
beoꝝ libros. legit quidē eos eccleſia. ſed
inter canonicas ſcripturas nō recipit:
ſic ⁊ hec duo volumina legat ad edi
ficationē plebis: nō ad auctoritatem
eccliaſticoꝝ dogmatū confirmandam.
Si cui ſane ſeptuaginta interpretum
magis editio placet: habet eā a nobis
olim emendatā. Neq; enī noua ſic cu
dim⁹: ut vetera deſtruam⁹. Et tamē cū
diligētiſſime legerit. ſciat magis nr̄a
ſcripta intelligi: que nō in tercium vas
trāſfuſa coacuerit: ſed ſtatim de prelo
puriſſime cōmēdata teſte: ſuū ſaporē ſer
uauerit. Incipiūt parabole ſalomonis.
Parabole ſalomonis
filij dauid regis iſrl̄:
ad ſciendā ſapienti
am ⁊ diſciplinā: ad
intelligendā verba
prudentie et ſuſcipi
endā eruditationē doctrine: iuſticiā
et iudiciū ⁊ equitatē: ut detur paruulis
aſtucia: et adoleſcenti ſciencia et intel
lectus. Audiēs ſapiēs ſapiētior erit: ⁊
intelligēs gubernacula poſſidebit. Ani
maduertet parabolam et interpretatio
nem: verba ſapientiū ⁊ enigmata eorū.
Timor dn̄i principiū ſapiētie. Sapien
tiam atq; doctrinam ſtulti deſpiciūt.
Audi fili mi diſciplinā pr̄is tui et ne
dimittas legem m̄ris tue: ut addatur
gratia capiti tuo: ⁊ torques collo tuo.
Fili mi ſi te lactauerint peccatores: ne ac
quieſcas eis. Si dixerit veni nobiſcū.
inſidiemur ſāguini. abſcōdam⁹ tedi
culas contra inſontem fruſtra. deglutia
mus eū ſicud infernus viuentē ⁊ inte
grum. quaſi deſcēdentē in lacū: omnē
precioſā ſubſtanciā reperiem⁹. implebim⁹
domus nr̄as ſpolijs. ſortem mitte no
biſcum. marſupiū ſit unum omniū
nr̄m: fili mi ne ambules cū eis. Pro
hibe pedem tuū a ſemitis eoꝝ. Pedes
eni illoꝝ ad malū currūt: ⁊ feſtināt ut
effundant ſāguinem. Fruſtra autem
iacit̄ rete ante oculos pēnatoꝝ. Ipi q;
contra ſanguinē ſuū inſidiantur: et

THIS facsimile page is from the so-called "42-line" Gutenberg Bible, containing a portion of the Psalms of David in the Latin text. This Gutenberg Bible was the first book in the Occidental world to be printed from movable type. It required three years (1452 to 1455) to complete. The first copy to cross the Atlantic is in the Collection of the New York Public Library.

First RECORDS *Ever Printed in* ENGLISH—*Coverdale* 1535



The ſeconde parte of the olde Teſtament.

The boke of Joſua.
The boke of the Judges.
The boke of Ruth.
The firſt boke of the Kynges.
The ſeconde boke of the Kynges.
The thirde boke of the Kynges.
The fourth boke of the kynges.
The firſt boke of the Cronicles.
The ſeconde boke of the Cronicles.
The firſt boke of Eſdras.
The ſeconde boke of Eſdras.
The boke of Heſter.

THESE facsimiles are from the quaint Sixteenth Century English text (the Fifty-Fifth, Eighteenth and One Hundred and Thirty-Ninth Psalms respectively) in the Coverdale Bible, the first Bible to be printed in English (1535), now among the treasures of the New York Public Library.

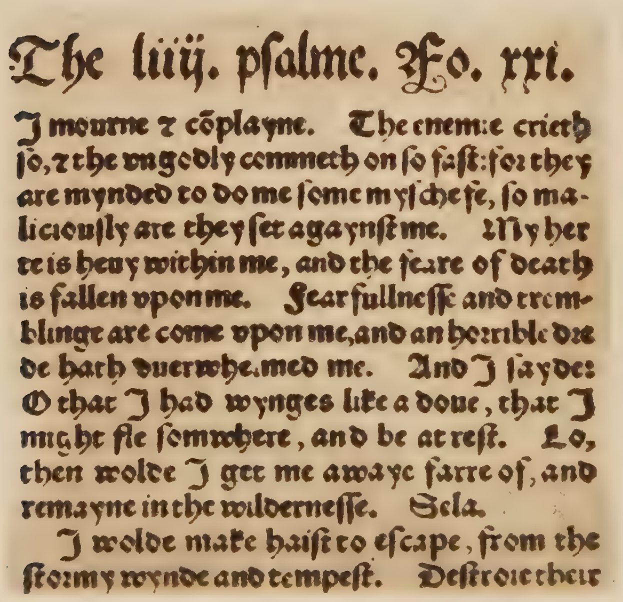
This is the Myles Coverdale translation of the Psalms, which stands largely unchanged after four centuries.

The Bible was a proscribed book in England at the time. Coverdale was forced to have it printed in Switzerland.

The decorated title page of "The Seconde Parte of the Old Testament" in the Coverdale Bible, pictures episodes in the life of King David of Israel, who wrote the Psalms.

References to wings are frequent in other portions of the Bible, but nowhere are David's poetic flights of imagination more beautifully expressed than in these reproductions with their memorable lines: "O, that I had wings like a dove," "He came flying with the wings of the wind," and "If I take the wings of the morning."

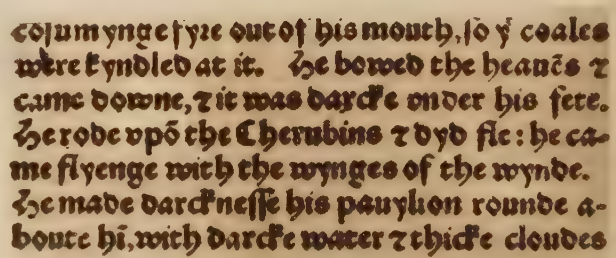
Psalms of David



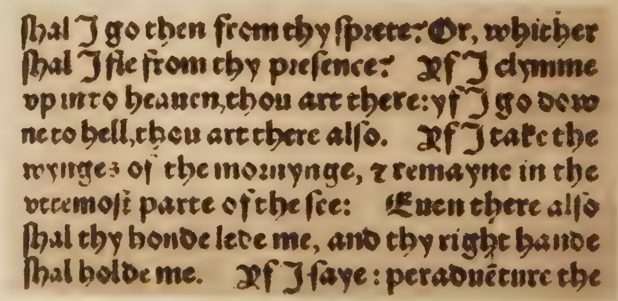
The liiij. pſalme. Fo. xxi.

I mourne ⁊ cōplayne. The enemie crieth ſo, ⁊ the vngodly commeth on ſo faſt: foꝛ they are mynded to do me ſome myſcheſe, ſo maliciouſly are they ſet agaynſt me. My herte is heuy within me, and the feare of death is fallen vpon me. Fearfullneſſe and tremblinge are come vpon me, and an hoꝛrible drede hath ouerwhelmed me. And I ſayde: O that I had wynges like a doue, that I might fle ſomwhere, and be at reſt. Lo, then wolde I get me awaye farre of, and remayne in the wilderneſſe. Sela.

I wolde make haiſt to eſcape, from the ſtoꝛmy wynde and tempeſt. Deſtroie their

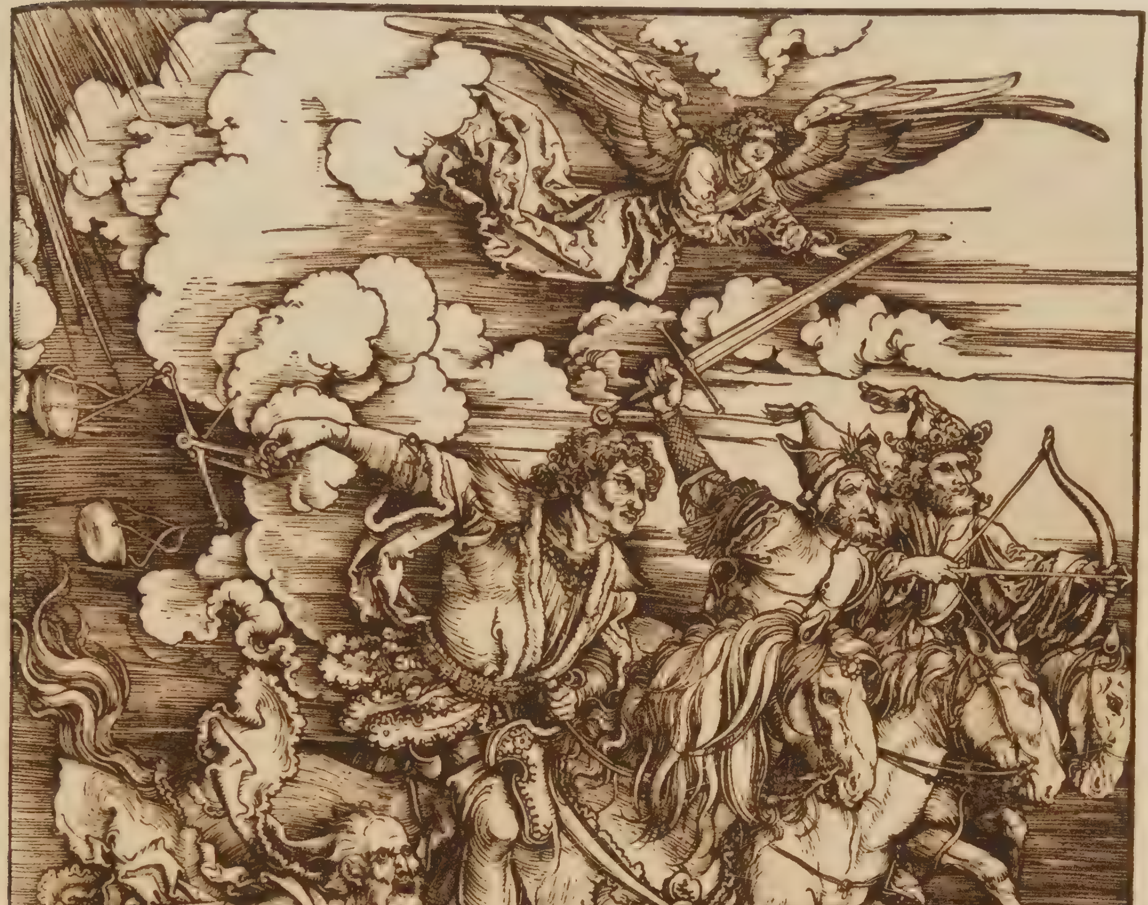


coſumynge fyꝛe out of his mouth, ſo yͤ coales were kyndled at it. He bowed the heauēs ⁊ came downe, ⁊ it was darcke vnder his fete. He rode vpō the Cherubins ⁊ dyd fle: he came flyenge with the wynges of the wynde. He made darckneſſe his pauylion rounde aboute hī, with darcke water ⁊ thicke cloudes



ſhal I go then from thy ſpꝛete? Or, whither ſhal I fle from thy pꝛeſence? Yf I clymme vp into heauen, thou art there: yf I go downe to hell, thou art there alſo. Yf I take the wynges of the moꝛnynge, ⁊ remayne in the vttemoſt parte of the ſee: Euen there alſo ſhal thy honde lede me, and thy right hande ſhal holde me. Yf I ſaye: peraduēture the

"FOUR HORSEMEN *of* APOCALYPSE"—*Book of Revelation*



THE Four Horsemen of the Apocalypse are riding the air on their fiery steeds; the White, the Red, the Black and the Pale Horse of Death, as related in the Book of Revelation of St. John the Divine. This wood engraving is left to posterity by Albrecht Durer, German painter.

PHILOSOPHY *of* CONFUCIUS *and the* EARTH-*Bound*—550 B.C.

Ancient
Print
from the
Oriental
Collection
of the
New York Public
Library

"The
Heavens
cannot
be gone
up to
by the
steps
of a
stair"
Confucius

ORIENTAL Philosophers and founders of religious and moral systems, Confucius, Buddha and Mahomet, feature in their teachings a Heaven of ethereal transition which perforce plays an impelling part.

Confucius, the Sage of China (550 B.C.), pictured Heaven as a vague impersonal term (which took the place of a conception of Divinity) inhabited by those whose powers far transcended those of the earthbound.

His professed disciples during his life numbered some three thousand and he had greater influence on Oriental thought than any other man. His followers today exceed 350,000,000.

A contemporary of Confucius was Lu Pan, "The mechanician of Lu," who is said to have made a magpie from bamboo and wood, which he caused to fly.

BUDDHA *and* MAHOMET *Create* WINGED HEAVEN *for Man*

MAHOMET—or Mohammed—(570-632 A.D.) gives far more place to physical transition than any other religious leader. He creates a winged Heaven, where winged houris fly through eons of delight for the faithful.

In the Koran, of "miraculous origin," Mahomet even points out the superiority of Solomon, in that "he gathered to himself the birds of the air" and divided them into groups to fight for him.

Gautama Buddha (500 B.C.) promised superhuman powers which included traversing the air and poising cross-legged in it. "Just as a bird with his wings, O king, whithersoever he may fly, carries his wings with him as he flies," says Buddha in the Samanna.

Buddhistic literature contains many tales of human flight. In one of the Jatakas, stories of previous births of Buddha, a gem is mentioned which had the miraculous power of raising him into the air when he held it in his mouth and permitted him aerial travel wherever he wished to go.

Japanese Print of Buddha

ANCIENT PRINT OF MAHOMET

THE Katha Sarit Sagara ("Ocean of Streams of Stories") tells of flying Brahmans and of shoes which enable the wearer to fly through the air.

By a ruse, King Putraka acquired a pair of these, flew to the window of a princess whom he loved, took her in his arms and eloped with her by air, finally descending from Heaven near the banks of the Ganges.

Buddhist legends frequently mention a "swiftfoot apparatus" for rapid locomotion of the saints.

The picture below is from a painting by Keichyu Yamada, professor in the Imperial Art Institute in Tokio.

Ancient GREEKS *Relate How the* "ETHEREAL *Coursers* FLY"

WE present herewith documentary evidence from Ancient Greece and Rome before the Christian era.

Here, we read the lines from the mighty Homer (940-850 B.C.), whose deathless epics ring down the ages. First of the poets to concern himself with the flights of gods and goddesses, he tells us in the *Iliad* how "the ethereal coursers fly."

We find, too, that Aeschylus (525-456 B.C.) Pindar (518 B.C.), Sophocles (495-406 B.C.) and Euripides (484-407 B.C.), who left their marked impress on human history, often give metrical expression to this great desire for flight.

Euripides in the Greek text and translation from "*Iphigenia in Aulis,*" one of the most finished works of the Greek poet, presents us with a hero who yearns to fly.

Aeschylus, oldest of the Greek tragedians, puts into words the same aspiration of earth-bound mortals.

Among the Latins we find the famous Ode to Archytus, the Sage of Tarentum, whose wooden pigeon we shall meet later in these pages. The facsimile on the page on the right is from the Roman poet, Horace (65-8 B.C.).

In the "*Sphere of Archimedes*" (287-212 B.C.), founder of our system of mathematics, we find a self-moving epitome of the solar system. Claudian, Latin poet, who came to Rome in A.D. 395, in his "*Epigrams,*" makes Jove speak of this epochal invention of the Greek physicist.

Centuries later, Ovid (43 B.C.-17 A.D.), last of the Augustan poets, put into rhyme the classic tales of "*Phaeton*" and of "*Daedalus and Icarus,*" which will be related in the ensuing chapters.

WHITE STEEDS IN HOMER'S ILIAD

Lash'd her white steeds along the aerial way.
Swift down the steep of Heaven the chariot rolls,
Between the expanded earth and starry poles.
Far as a shepherd, from some point on high,
O'er the wide main extends his boundless eye;
Through such a space of air, with thund'ring sound
At every leap, the immortal coursers bound:

PINDAR'S WINGED GODS ON THE ETHEREAL PLANE

ἀλλὰ πάντων
Ταμίαι ἔργων ἐν οὐρανῷ
Χρυσότοξον θέμεναι
Παρὰ πύθιον Ἀπόλλωνα θρόνους,
Ἀέναον σέβοντι πατρὸς
Ὀλυμπίοιο τιμάν.

Ever on the ethereal plain
In harmonious measures move
The celestial choirs above.

AESCHYLUS' ASPIRATION TO FLY

Oh that I could as smoke arise,
That rolls its black wreaths through the air;
Mix with the clouds, that o'er the skies
Show their light forms, and disappear:
Or like the dust be toss'd
By ev'ry sportive wind, till all be lost!

—ÆSCHYLUS, *The Suppliant's Chorus,*

EURIPIDES' CHARIOT OF FIRE

Λαμπρὸν ἱππόδρομον βὰς,
Ἔνθ᾽ εὐάλιον ἔρχεται πῦρ.
Οἰκείων δ᾽ ὑπὲρ θαλάμων
Πτέρυγας ἐν νώτοις ἁμοῖς
Λήξαιμι θοάζουσα·
Εὐριπίδου,
Ἰφιγενεία ἡ ἐν Ταύροις, 1140.

Oh! might I travel through yon lucid road,
Where rolls the chariot of the fiery God;
Might I through th' impassive air
My unwearied course pursue!
Till, distinguished from afar,
My dear country rose to view:
Then quick descending from my airy height,
My pinions would I close, and stay my flight.

Records
from
Christopher
Hatton
Turnor's
ASTRA
CASTRA
London
1865

Old ROMANS *Record Human* FLIGHT *Centuries Before* CHRIST

CÆLUM IPSUM PETIMUS STULTITIÂ.—*Hor. Ode* 1, *III.* 38.

HORACE RELATES THE STORY OF ARCHYTUS AND HIS WOODEN DOVE

Te, maris et terræ numeroque carentis arenæ,
Memorem cohibent, Archyta,
Pulveris exigui, prope litus parva Matinum
Minerva. Nec quidquam tibi prodest
Aerias tentasse domos, animoque rotundum
Percurrisse polum, morituro.
HORACE, *Carm.* I. 28.

Archytas! thou sage, who measured the Earth and the Sea: and did count the grains of sand that are infinite in number, now that you lie extended near the Matinian shore, covered only with a small quantity of dust, is it of any service to you, who wert so soon to die, that you penetrated into the broad heavens, and by a vast and comprehensive understanding, extended your views from one Pole to the other?

CLAUDIAN TELLS OF THE WONDERS OF THE SPHERE OF ARCHIMEDES

Jupiter in parvo cum cerneret æthera vitro
Risit, et ad superos talia dicta dedit.
Huccine mortalis progressa potentia curæ?
Jam meus in fragili luditur orbe labor.
Jura poli, rerumque fidem, legesque Deorum,
Ecce Syracusius transtulit arte senex.
Inclusus variis famulatur spiritus astris
Et vivum certis motibus urget opus.
Percurrit proprium mentitus signifer annum
Et simulata novo Cynthia mense redit,
Jamque suum volvens, audax industria mundum
Gaudet, et humanâ sidera mente regit.
Quid falso insontem tonitru Salmonea miror?
Æmula naturæ parva reperta manus.

When in a narrow glass Jove saw the skies,
He smiled, and thus to gods expressed surprise:
" See, how man's talents imitate our ways;
" My heavenly work a fragile globe displays:
" An aged Syracusan, by his skill,
" Arranges poles, laws, harmony, at will,
" To stars, a secret spring gives motion true:
" The parts with steadiness their path pursue;
" A zodiac, framed by hand, receives the Sun.
" Which through the year, proceeds his course to run:
" And Cynthia, feigned, is seen each month to trace
" The orbit o'er, and again show her face.
" Audacious art, the world with pleasure, rolls:
" The human mind celestial orbs controls.
" Why, at Salmoneus' thunder, wonder feel?
" All Nature's plan, those fingers can reveal."

OVID RECORDS THE TALES OF "DAEDALUS AND ICARUS" AND "PHAETON"

Interea volucres Pyroeis, Eous, et Æthon,
Solis equi, quartusque Phlegon, hinnitibus auras
Flammiferis implent, pedibusque repagula pulsant.
Quæ postquam Tethys, fatorum ignara nepotis,

Meanwhile the restless horses neigh'd aloud,
Breathing out fire, and pawing where they stood.
Tethys, not knowing what had pass'd, gave way,
And all the waste of heaven before them lay.

ASTOLPHO, *Knight of* BRITAIN—*His* AERIAL CHARIOT

THE KNIGHT ASTOLPHO AND SAINT JOHN SOAR AMONG THE CLOUDS IN A FLYING CHARIOT

THIS old print from Astra Castra tells the story of the English knight, Astolpho, who left Britain in an Aerial Chariot to fly to the Source of the Nile. The lines below are from the "*Orlando Furioso,*" a great work by Lodovico Ariosto (1474–1533), Italian poet of Ferrara. The English translation from the original Italian text is by William Stewart Rose.

"Astolpho in his flight will I pursue,
That made his hippogryph like palfrey flee,
With reins and sell, so quick the welkin through;
That hawk and eagle soar a course less free."

"Four goodly coursers next, and redder far
Than flame, to that fair chariot yokes the sire;
Who, when the knight and he well seated are,
Collects the reins; and heavenward they aspire."

Bernardo Tasso, a later Italian poet (1544–1595), also of Ferrara, in the epic "*Gerusaleme Liberata,*" portrays the Angel Gabriel, on a long aerial journey:

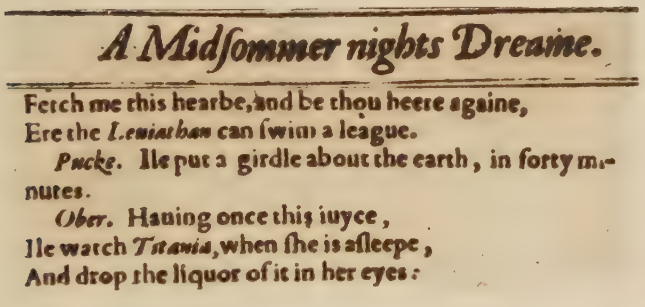
"Of silver wings he took a shining pair,
Fringed with gold, unwearied, nimble, swift;
With these he parts the winds, the clouds, the air,
And over seas and earth himself doth lift.

"Thus clad, he cuts the spheres and circles fair,
And the pure skies with sacred feathers clift:
On Lebanon at first his foot he set
And shook his wings with rory May-dews wet."

SHAKESPEARE *Frequently Refers to* HUMAN FLIGHT—1601

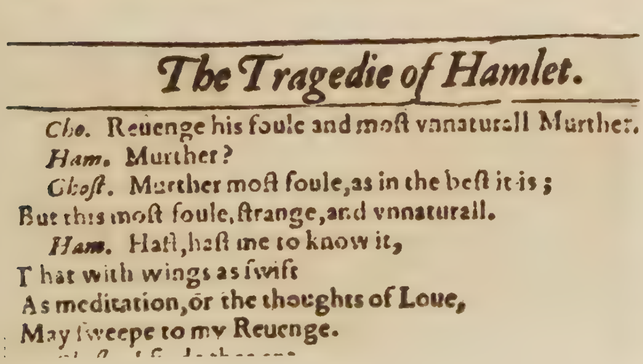
SHAKESPEARE READING "MACBETH" BEFORE QUEEN ELIZABETH

SHAKESPEARE (1564 1616), throughout the Elizabethan era, constantly utilizes human flight in his immortal dramas. We present here four typical instances from his plays. They are given below in the old English text in the Chatsworth copy of the First Printed Edition of Shakespeare's Works in the collection of the Duke of Devonshire. *"A Midsummer Night's Dream," "Cymbeline," "Hamlet"* and *"The Merchant of Venice"* contain pointed allusions to flying.



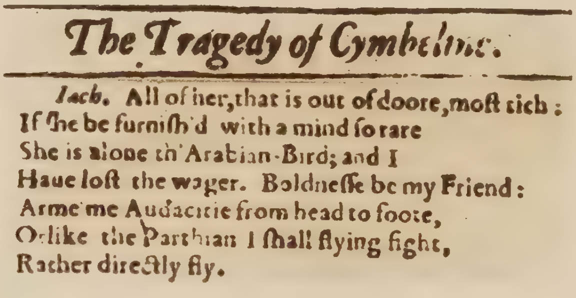
A Midſommer nights Dreame.

Fetch me this hearbe, and be thou heere againe,
Ere the *Leuiathan* can ſwim a league.
Pucke. Ile put a girdle about the earth, in forty minutes.
Ober. Hauing once this iuyce,
Ile watch *Titania*, when ſhe is aſleepe,
And drop the liquor of it in her eyes:



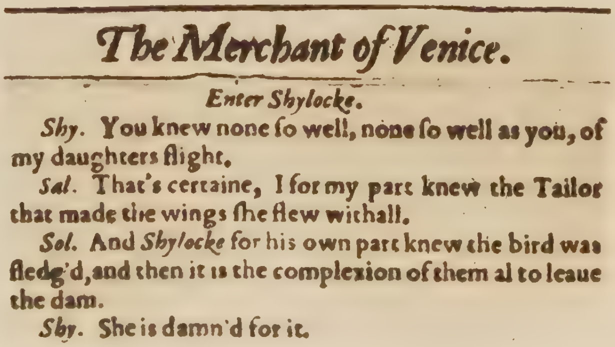
The Tragedie of Hamlet.

Gho. Reuenge his foule and moſt vnnaturall Murther.
Ham. Murther?
Ghoſt. Murther moſt foule, as in the beſt it is;
But this moſt foule, ſtrange, and vnnaturall.
Ham. Haſt, haſt me to know it,
That with wings as ſwift
As meditation, or the thoughts of Loue,
May ſweepe to my Reuenge.



The Tragedy of Cymbeline.

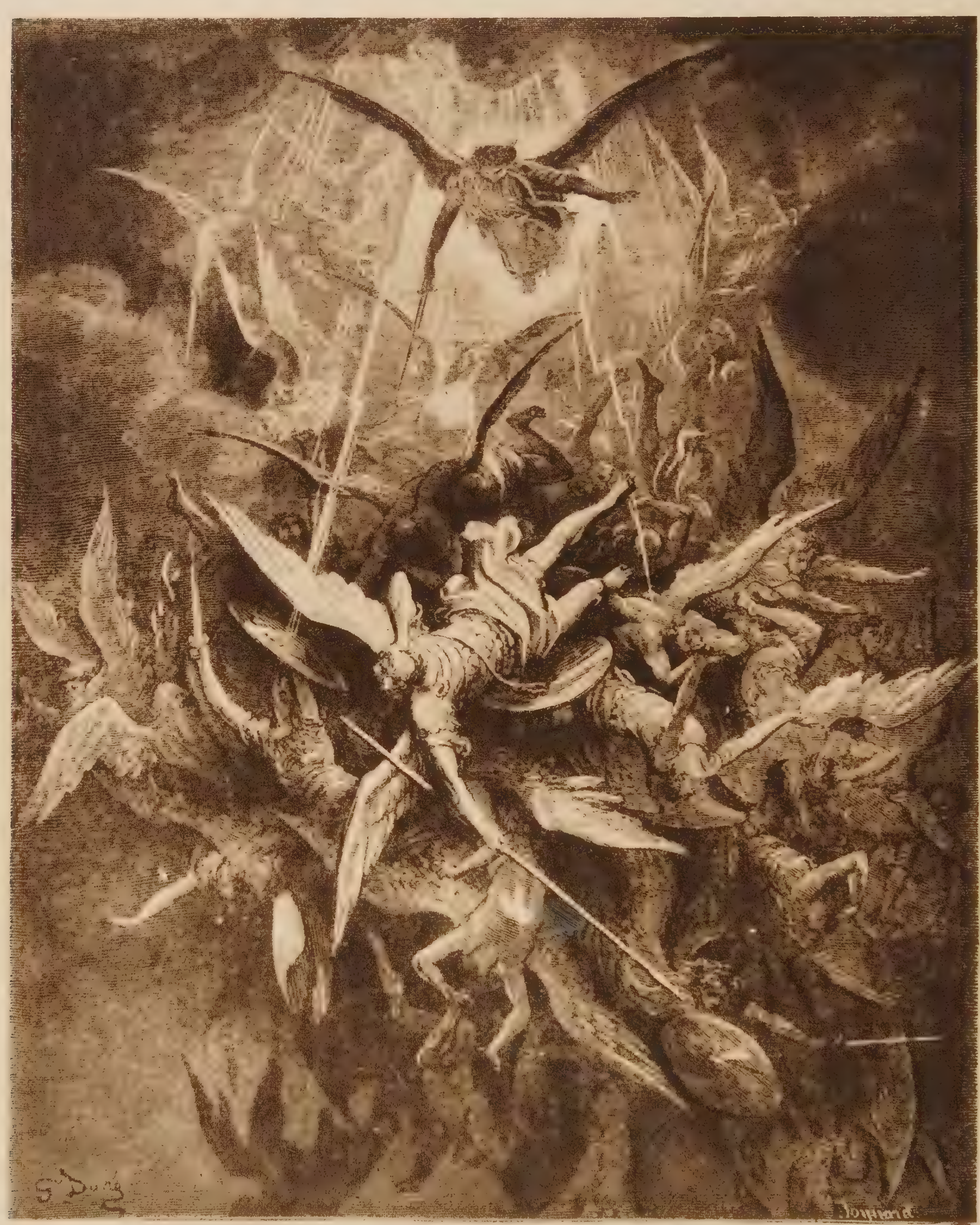
Iach. All of her, that is out of doore, moſt rich:
If ſhe be furniſh'd with a mind ſo rare
She is alone th' Arabian-Bird; and I
Haue loſt the wager. Boldneſſe be my Friend:
Arme me Audacitie from head to foote,
Or like the Parthian I ſhall flying fight,
Rather directly fly.



The Merchant of Venice.

Enter Shylocke.
Shy. You knew none ſo well, none ſo well as you, of my daughters flight.
Sal. That's certaine, I for my part knew the Tailor that made the wings ſhe flew withall.
Sol. And *Shylocke* for his own part knew the bird was fledg'd, and then it is the complexion of them al to leaue the dam.
Shy. She is damn'd for it.

MILTON'S *Vision of* WINGED WORLD—*Engraving by* DORE



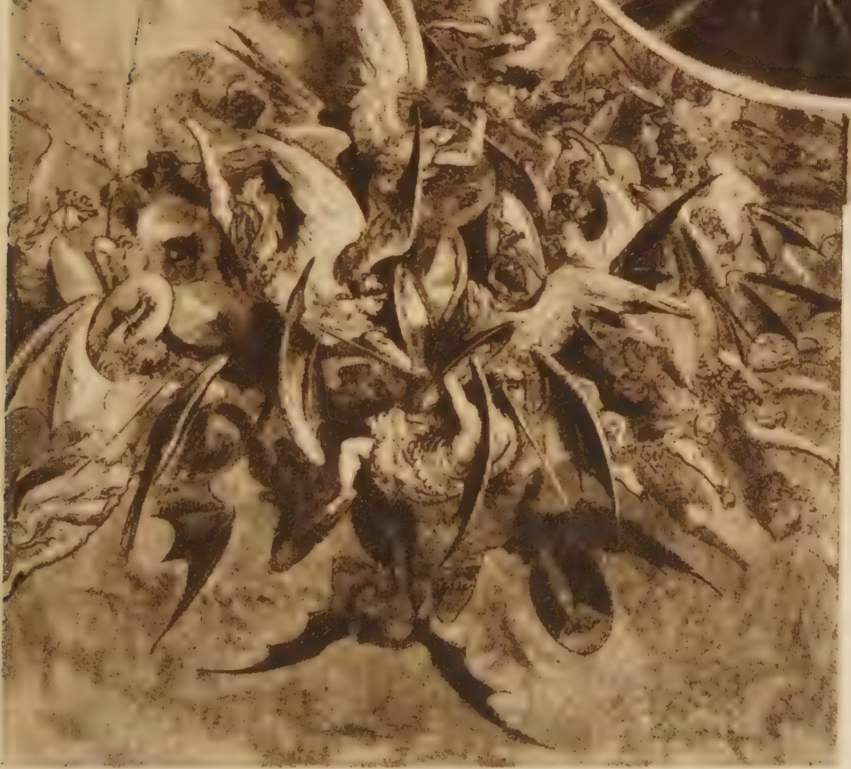
"Him the Almighty Power
Hurled headlong flaming from the ethereal sky."
Paradise Lost—Book 1, lines 44, 45.

HOSTS BATTLING *in the* CLOUDS *in* PARADISE LOST—1667

JOHN MILTON (1608-1674), whose distinguished portrait appears at the right, completed his masterpieces of English poetry, "*Paradise Lost*" and "*Paradise Regained,*" in 1665 and 1673, when a winged Heaven and a winged Hell were established as a certainty in human minds.

Milton's magnificent verse is filled with winged hosts battling in the clouds. His favorite poets were Homer, Euripides, Ovid, and Shakespeare, whom we have already quoted, and his imagination, as theirs, made much of flight upon the higher plane.

Gustave Dore (1832-1883), French artist, made these famous illustrations of Milton's poems two centuries after the master wrote them. The pictures on this and the preceding pages are typical of Dore in his most inspired moments. His great genius gives us pictures which could hardly be more fully in the spirit of the word-painter.



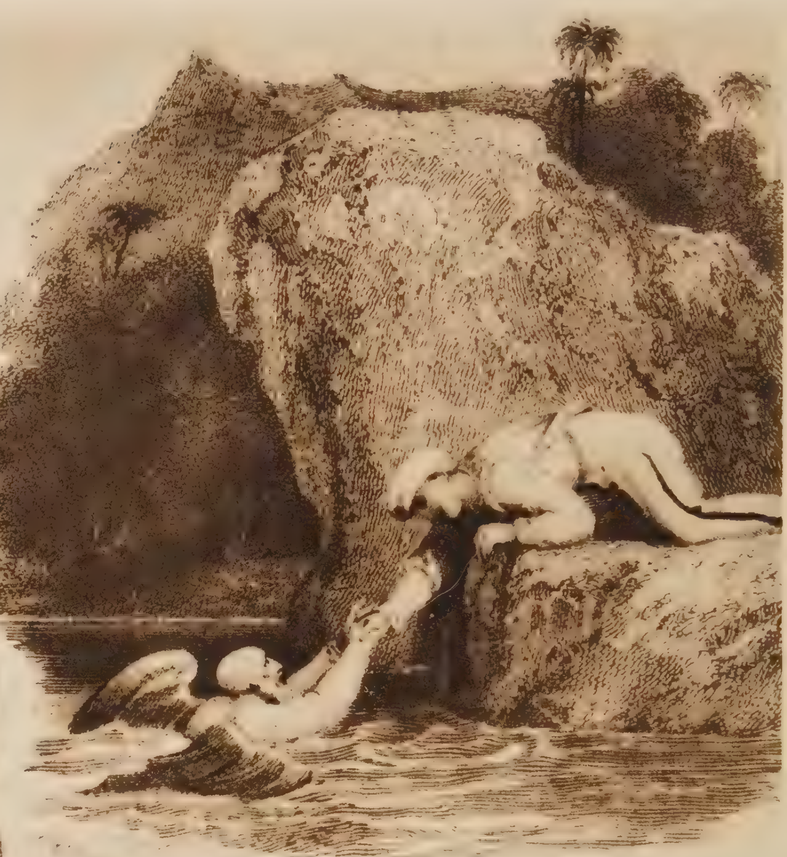
Prints in the British Museum

"Now storming fury rose
And clamour, such as heard in Heaven till now
Was never—"
Paradise Lost—Book VI.

RASSELAS *Rescues* "FLYING MAN"—*Samuel* JOHNSON, 1759

Dr. Samuel Johnson, (1709–1784) through his writings, left an impress on English letters which yet endures. He was inclined to deride the possibility of human flight; yet before the death of the man who, among other things, gave the world the first complete dictionary of English, men began to sail through the air.

We shall see how the Montgolfier brothers sent a hot air balloon into the sky at Annonay; Dr. Charles and the brothers Robert sailed a small hydrogen balloon in Paris; and finally Pilatre de Rozier and the Marquis d'Arlandes actually made a voyage through the air—all in the last days of Dr. Johnson, the cynic.



OLD PRINT FROM TITLE PAGE OF DR. JOHNSON'S WORKS

DR. JOHNSON in his fantastic "Rasselas" (1759) devoted a chapter to "A Dissertation on the Art of Flying." Rasselas was a Prince of Abyssinia living in the Happy Valley. One day Rasselas came upon a man, eminent in knowledge of physical science and mechanics, as he was constructing a flying device.

"I have long been of opinion," said the man, "that instead of the tardy conveyance of ships and chariots, man might use the swifter migration of wings; that the fields of air are open to knowledge, and that only ignorance and idleness need crawl upon the ground."

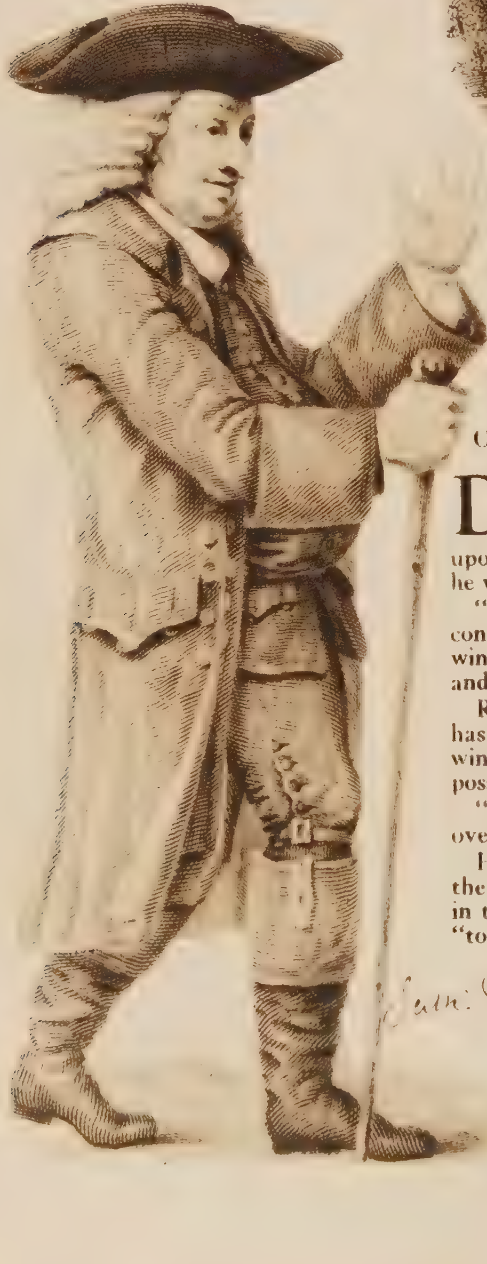
Rasselas fears the artist's imagination overreaches his skill. "Every animal has his element assigned to him," remarks the Prince. "Flying with artificial wings would be very laborious and of little use unless our powers made it possible for us to fly further than we can swim."

"Nothing will ever be attempted if all possible objections must first be overcome," responds the inventor to Rasselas' further pessimistic comments.

He has studied the birds and flying mammals; has become convinced that the wings of the bat are best suited in form to human purposes; and proposes, in the course of a year, to build a set of wings in which he believes he can "tower the air beyond the malice and pursuit of man."

Rasselas becomes so interested that he agrees to back the scheme, and within the time specified the wings are ready. The "Flying Man" ascends to the verge of a precipice on the shore of a lake, leaps from a promontory—and promptly falls into the water beneath.

Fortunately the wings which had failed him in the air were sufficient to support him in the water until Prince Rasselas was able to drag him to land "half dead with terror and vexation."



Sam: Johnson.

TENNYSON'S *Vision of* FLIGHT *in* "LOCKSLEY HALL"—1842

LORD TENNYSON (1809-1892), beloved poet laureate of England for two generations, lived and wrote in the midst of efforts of men to build and fly a practical flying machine.

The balloon became an everyday affair in Tennyson's lifetime and the airplane was almost here when he died. His poetic vision saw in all its glory the "World in the Air" which was to come.

In "*Locksley Hall*" (1842), and later in "*The Princess*" and other poems, are allusions to the dreams to be realized. The verse of the former contains these prophetic lines:

"For I dipped into the future, far as human eye could see,
Saw the Vision of the World, and all the wonder that would be,
Saw the heavens fill with commerce, argosies of magic sails,
Pilots of the purple twilight, dropping down with costly bales;
Heard the heavens fill with shouting, and there rain'd a ghastly dew
From the nations' airy navies grappling in the central blue;
Far along the world-wide whisper of the south wind rushing warm
With the standards of the peoples plunging thro' the thunder storm;
Till the war-drum throbb'd no longer and the battle flags were furl'd
In the Parliament of Man, the *Federation of the World*."

PORTRAITS OF
TENNYSON
AND
THACKERAY

WILLIAM MAKEPEACE THACKERAY (1811-1863), English novelist who wrote prose as classical as the poetry of his distinguished contemporary, brought out his "*Irish Sketch Book*" in 1843.

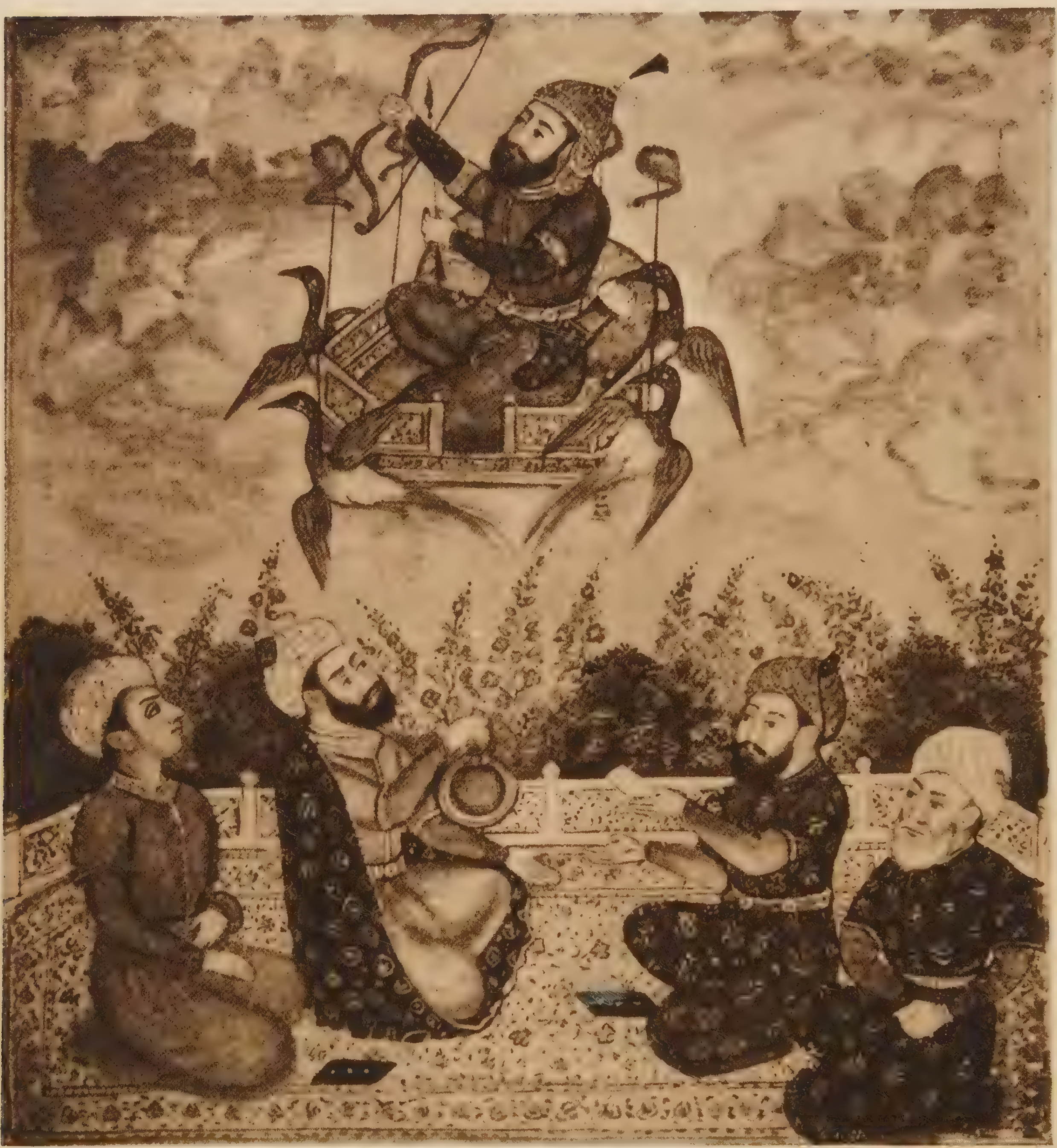
With equally prophetic vision, Thackeray refers to flying machines which are to become commonplace "a hundred years later."

Traveling over Ireland in the jaunting cars of that day, his graphic descriptions of the quaint and picturesque sights which met his eye are a delight to the readers in this modern age.

In Armagh, he noted a village church which was the pride of the community—but looked too new to suit his aesthetic taste. Its architecture he thought "raw." "It needs a hundred years to mellow it," he said.

"Future Cockneys," wrote the great Englishman, "setting off after breakfast from London Bridge in an *Aerial Machine* may come to hear the morning service here (in the Armagh Church) and not remark the faults which have struck a too susceptible tourist of the Nineteenth Century."

FLYING CAR *of* PERSIA *Inlaid with* GOLD *and* JEWELS



HERE we meet Kai Kaoos, hero king of ancient Iran (long since become Persia), on his Aerial Throne—1500 or more years before Christ. Fighting wars which finally made him supreme on earth, he was persuaded by his counselors to venture upon an aerial journey.

Kai Kaoos had built a light throne of aloes wood. Eagles' nests were robbed of male eaglets, which were fed till strong and trained to carry this throne into the air. Its corner posts were javelins. Huge pieces of flesh were impaled on the points of the javelins.

The young eagles were harnessed with cords of a length which placed this meat just beyond their reach. Their efforts to reach this food carried the throne upward.

The King, seating himself therein, with ample food supply and a goblet of rare old wine, rose on his aerial journey. His eagles, tired of useless striving, folded their wings and dropped Kai Kaoos in the Kingdom of Chin (China?), where Rustem, Gudarz and Tus, his royal champions, found him.

"You are more fit for madhouse than throne, O King," cried Gudarz. Whereupon, Kai Kaoos acknowledged his folly with tears and returning to his palace shut himself up for forty days. So saith the Persian legend (see page 74)

PART III

First CIVILIZATIONS—*When Only* GODS *Could* FLY

ARCHAEOLOGY *and* MYTHOLOGY *Preserve the* FIRST RECORDS *of* FLIGHT

WE NOW enter upon explorations into the First Civilizations—China India, Persia, Assyria, Babylonia, Egypt, Greece, Rome—to ascertain to what extent the "Mastery of the Elements" entered into the minds of the builders of the first great empires.

The discoveries are somewhat astounding, upsetting, as they do, the dicta of the historiographers, inasmuch as we find that even in these ancient days, "when only the Gods could fly," records exist of man's attempts to navigate the skies long before the Great Pyramids were built, the oldest monuments to these long-gone civilizations.

The oldest legend of human flight is discovered in Babylonia (3500 B.C.) where archaeologists in their excavations have found Seal Cylinders of semi-precious stone on which are cut in cuneiform characters the adventure of Etana, who "flew to Heaven on the back of an eagle," a "fact" which was then generally believed.

The first man registered in history to make an actual flight in a "flying apparatus based on the principle of bird flight" (2258-2208 B.C.) is revealed in the official documents of China, inscribed on tablets of bamboo by the "*official historians*" who accredit this event to Emperor Shun.

The first "Flying Chariot" on record is that of Ki-Kung in the reign of Emperor Ch'eng T'ang (1766 B.C.), founder of the Shang Dynasty, as inscribed in the *Ti wang shi ki* (History of the Ancient Emperors).

The ancient Arabic documents of *Al-Tha'alibi* relate the adventures of Kavi Usan (Kai Ka'us -- 1500 B. C.), King of Persia, traditional builder of the Tower of Babylon, who "seated on a throne supported by four eagles" attempted a skyward flight. This semi-legendary history is also corroborated in the *Bundahishn* (Sacred Books of the East) and in the *Shah-na-meh* (Book of Kings) by Firdausi.

The oldest legend of the Greeks, as we have stated, is that of *Daedalus and Icarus*, (approximately 1100 B.C.—about the time of the Trojan Wars) to which we refer frequently in these pages. We present herewith exhibits from recent excavations in Egypt where the winged motifs of their religions and mythology are preserved. These pages also include the records of Tutankhamun (1350 B.C.) and King Solomon (974 B.C.), builder of the Temple in Jerusalem.

The first record of "War in the Air" is found in the *Mahabarata* in India (about 600 B.C.) where it is stated that Krishna's enemies "built an aerial chariot with sides of iron and clad with wings. The chariot was driven through the sky till it stood over Dwarakha, where Krishna's followers dwelt, and from there it hurled down upon the city missiles that destroyed everything on which they fell."

The first civilization in the Western Hemisphere, with its winged images, is believed by many archaeologists to date back to that of the Asiatic peoples, according to discoveries at the seat of the ancient Maya "nation." These ruins have recently been photographed from the air by Colonel Charles Lindbergh.

OLDEST FLYING *Records in* EXISTENCE—*Babylon* 3500 B. C.

BABYLONIAN SEAL CYCLINDER IN NEAR EAST COLLECTION OF ASIATIC MUSEUM IN BERLIN

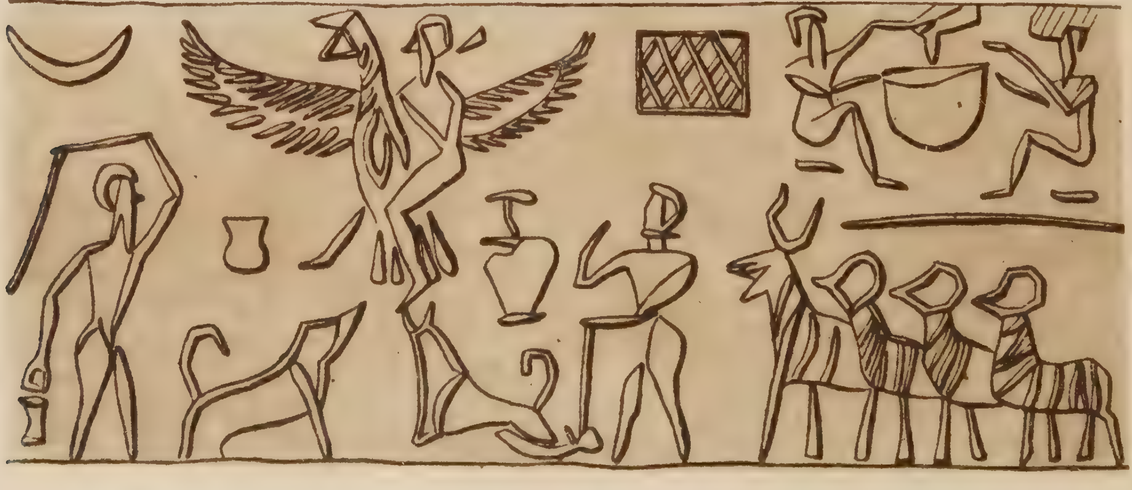
THE first earthbound mortal actually to venture into the air was Etana, a Babylonian shepherd. The record of his journey on the back of an eagle is found on these Seal Cylinders dated about 3500 B. C. Cylinder Seals are made of jasper, chalcedony, sardonyx and other semi-precious stones—round, about the size of a child's finger ring and an inch and a half long.

Engraved upon them in cuneiform characters are tales familiar to the peoples who successively lived in the Euphrates Valley. The Seals were rolled in clay or other soft substance to make a cast of the picture. Of the hundreds dug up by archaeologists but a few bear the Etana myth in different phases and these are dated between 3500 and 2000 B. C.

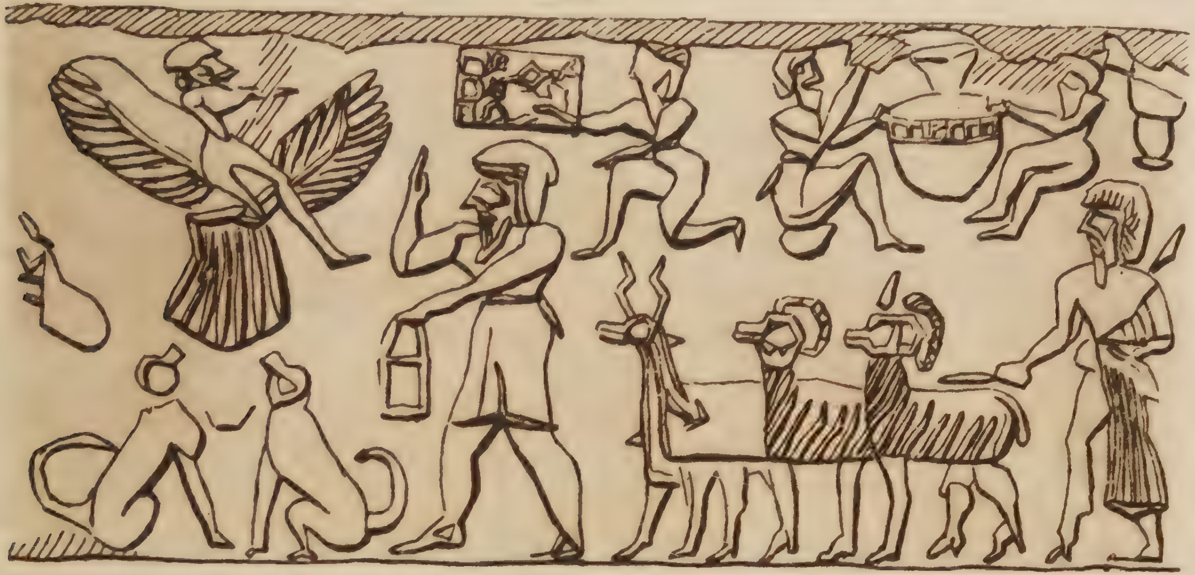
Etana lived in a city which had fallen into disfavor with the Babylonian gods and especially with Ishtar, "Goddess of Fecundity." No more births, of children or animals, were taking place there. Etana, the shepherd, searching for the *birth plant* on a mountainside, came upon the Eagle, wounded after a struggle with the Serpent, and revived him.

The Eagle, learning Etana's quest, agreed to bear him to the heavenly abode of Ishtar to make a plea for his city to the Goddess herself. Mounting upon the Eagle's back, Etana was borne into the clouds and in due time arrived on high at the palace of Ishtar.

The Goddess, however, offended at the presumption of a mere mortal, rebuked the Eagle and had Etana cast out without an audience. Thus the shepherd who was first of all mankind to make this great adventure fell to his death. The Seal Cylinders on this and the following page contain the earliest known pictures of human flight.



BABYLONIAN *Seal* CYLINDERS *in the* ASIATIC MUSEUMS

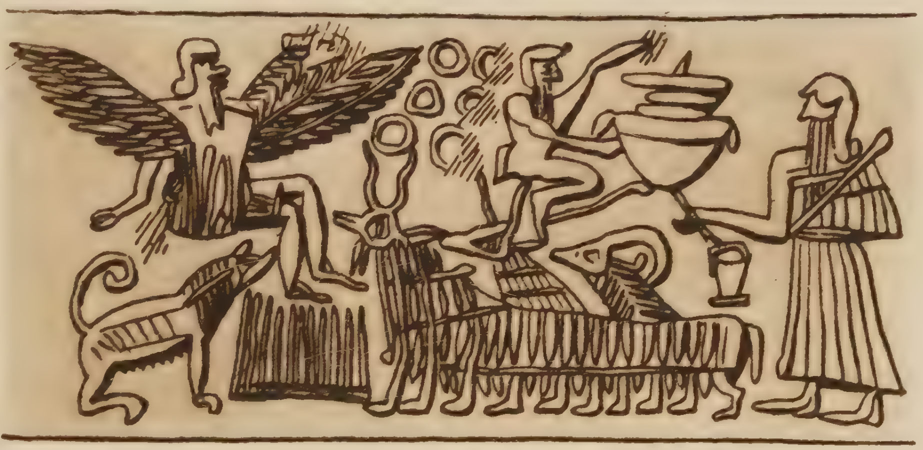


ORIGINAL SEAL CYLINDER IN COLLECTION OF SIR HENRY PEEK IN ENGLAND

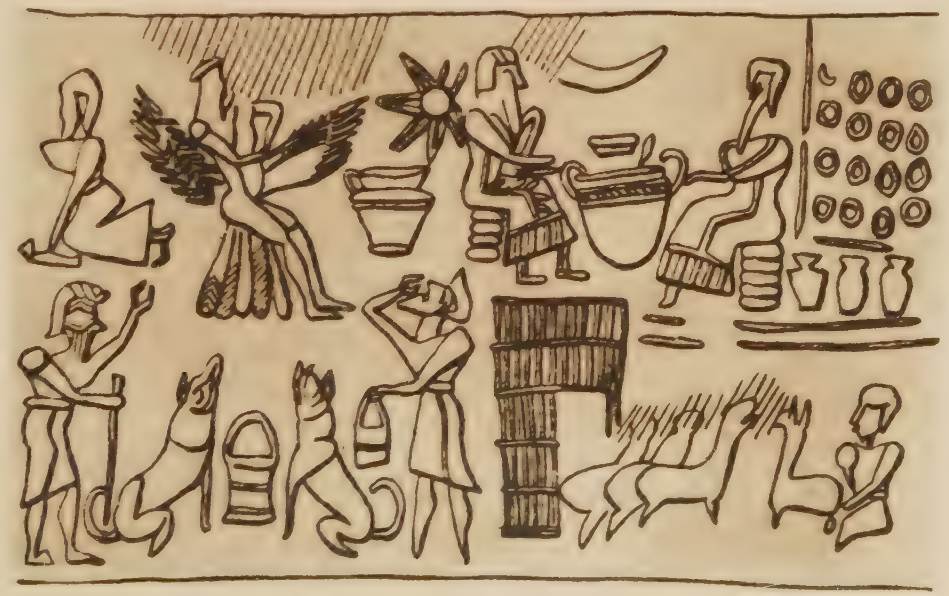
DRAWINGS from the Original Babylonian Records on this page are from the CARNEGIE INSTITUTION in Washington, preserved in the report of Dr. William Hayes Ward, noted archaeologist.

Etana is shown on the back of the Eagle. His dogs watch as he starts his flight. The other pictured details refer as definitely to the different phases of the event.

The Serpent and the Eagle made an offensive and defensive alliance whereby they were to divide the young of animals, birds or other food they might chance upon. The Eagle somehow contrived to eat some of the young of the Serpent, whereupon the latter thrashed him and threw him into a pit on the mountainside, where Etana found him.



ORIGINAL CYLINDER IN COLLECTION OF BRITISH MUSEUM



Original (right)
in the
Collection of
DE SARZAC
Famous French
Archaeologist

First "FLYING CHARIOT" *Recorded in* CHINA—2258 B. C.

THE Chinese Emperor Shun (traditional date 2258-2208 B. C.) is the first man in human history actually to fly a self-powered flying machine, according to Chinese official records. We have seen how Etana rode skyward on the back of an eagle; Kai Kaoos was carried upward by young birds of the same species, but Shun "built a Flying Chariot".

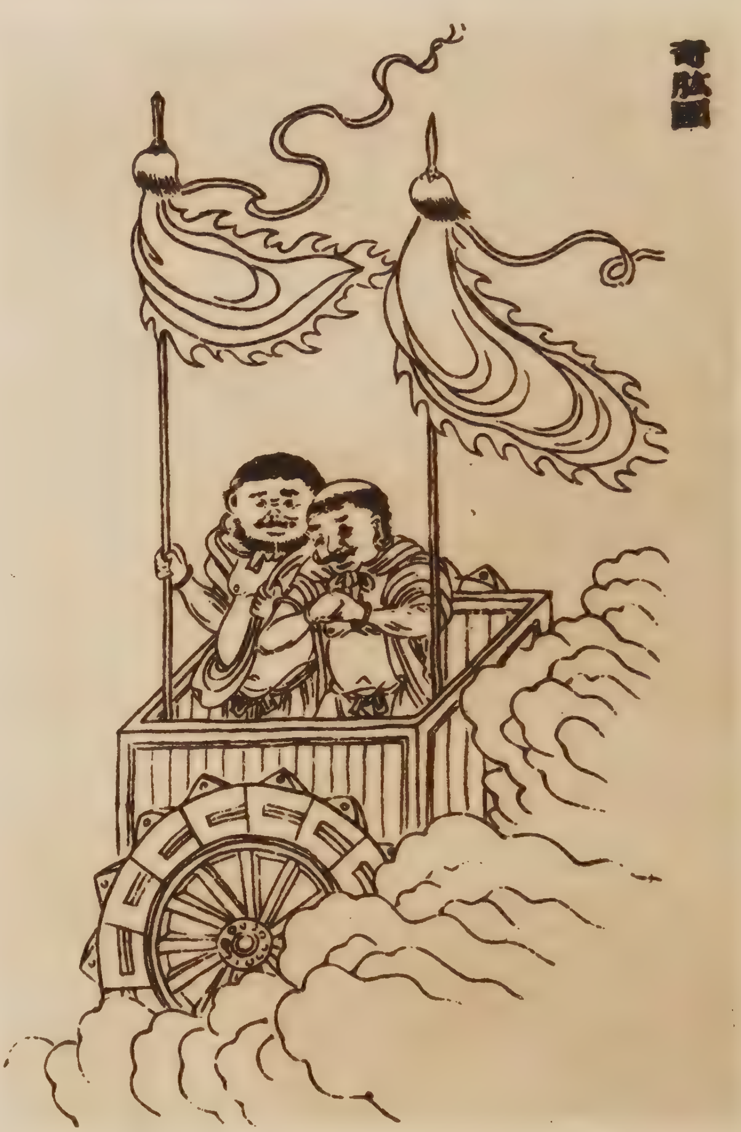
He, too, was the first human to make a successful descent in a parachute. This we are assured of in the "*Annals of the Bamboo Books.*" These Chinese historical records were written at the time and preserved.

Shun's early life teemed with adventures. He lost his mother at an early age and his father married again. The father became fond of a son by this second marriage and conceived a dislike for Shun. He tried to put the older boy away and Shun had several narrow escapes, but continued in such dutiful conduct toward his father and stepmother as to attract the attention of the Emperor Yao of China's "Golden Age."

The Emperor's two gifted daughters instructed Shun in the "Art of Flying like a Bird." This served Shun well when his parents made him plaster a granary and in an attempt to dispose of him, his father set fire to it at its foundation.

The *Bamboo Books* relate that he "donned the work clothes of a bird and flew away." But Se-ma Tsien, the "Father of History," has another version of the escape in which Shun, at the top of the Tower, spreads two huge umbrella-shaped reed hats and descends unhurt.

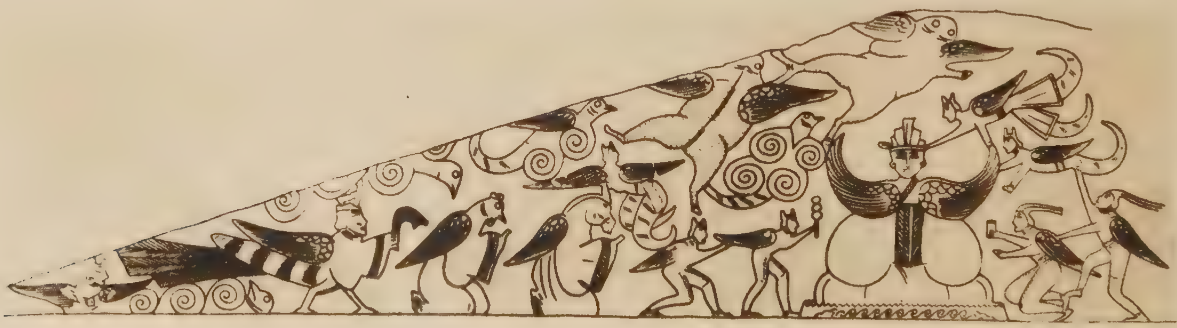
Shun finally married the two sisters who had so well taught him aviation and thus saved his life. His father-in-law, Emperor Yao, gave him a share in ruling the empire. Shun succeeded him on the throne.



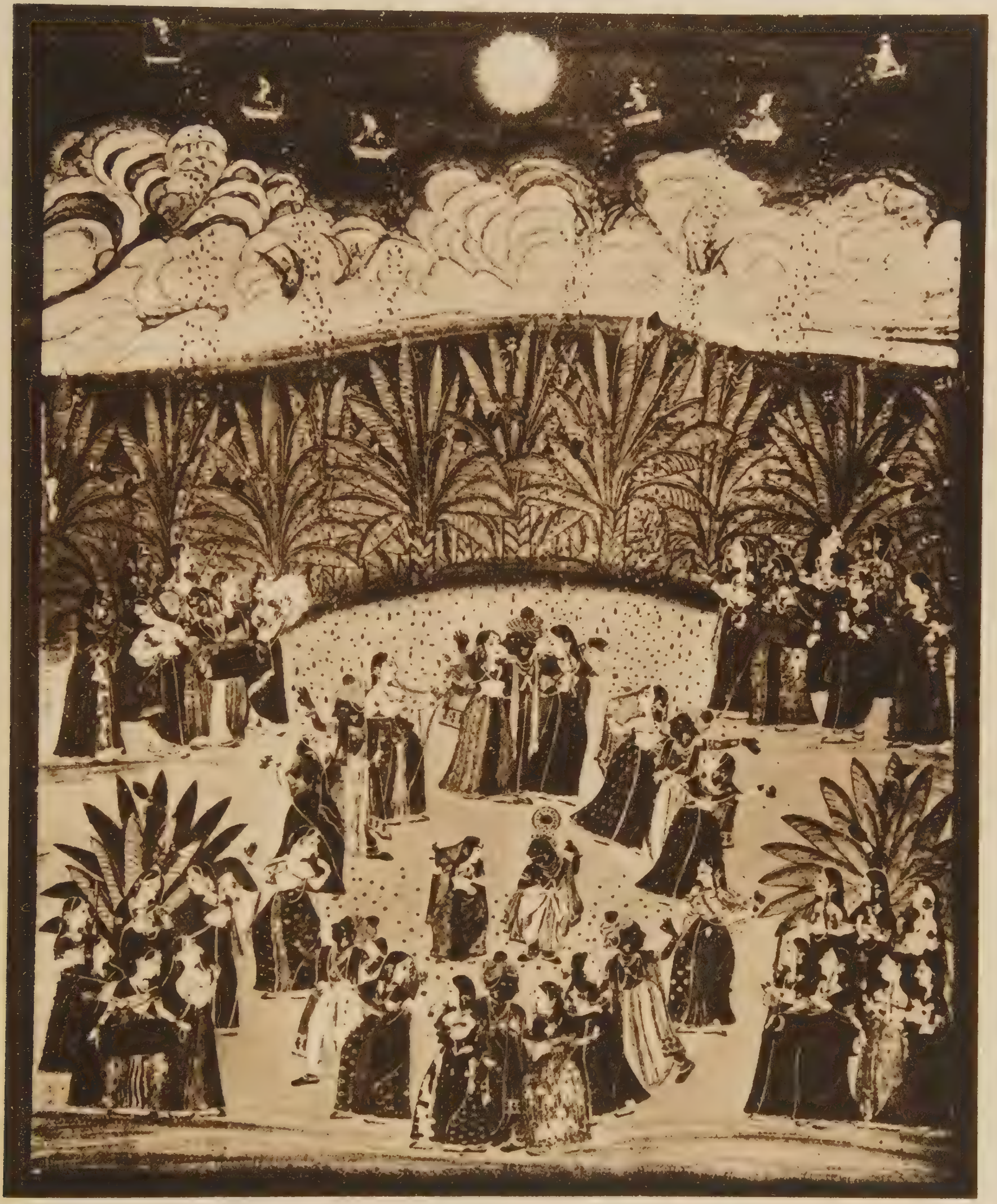
This reproduction from an old Chinese manuscript (above), dealing with legendary days, is of the "Flying Car" of Ki-Kung-Shi, a prince of Western China, who in the time of the Emperor Ch'eng T'ang (1766–1754 B. C.) "made a Flying Chariot which was driven by a fair wind even as far as Yu-chou (Ho-nan)."

The Emperor ordered it destroyed "so that it should not become known to the people." According to the *Ti wang shi ki* ("History of the Ancient Emperors"): "Ten years later, when the East Wind blew, the Emperor caused another chariot of this kind to be built by Ki-kung and sent him back in it."

"Flying Dragons," "Flying Men," "Flying Chariots" are everywhere in Chinese lore through the ages. The picture below is a stone bas-relief of the Han period (A. D. 147) from Shan-tung, China. It shows a winged deity.



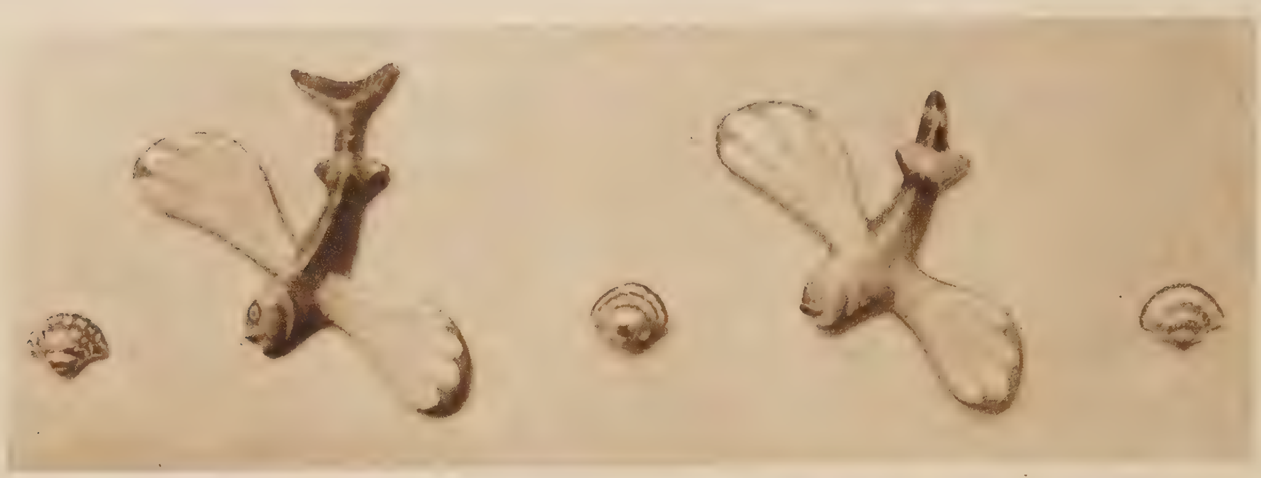
Demi-GODS *in* FLYING MACHINES *in Mythology of* INDIA



ANCIENT MINIATURE FROM INDIA—IN GOLD AND COLOURED ENAMEL

MOTHER INDIA, in her earliest mythology, tells of aerial deities, demigods, and Gandharvas elfs who haunted "fathomless spaces of air." Among divine steeds "Dadhikra was equipped with wings and sped like the wind. Vedic gods traversed the air in luminous cars drawn by fleet horses or cows, goats or spotted deer. Indra, favorite National God of the Aryan Indian, was borne "in a Golden Chariot swifter than thought." The beautiful miniature here presented pictures Indian women and demigods dancing together, with other demigods in Flying Machines.

RECORDS *from* EGYPT *and Isle of* CRETE—*About* 2000 B. C.

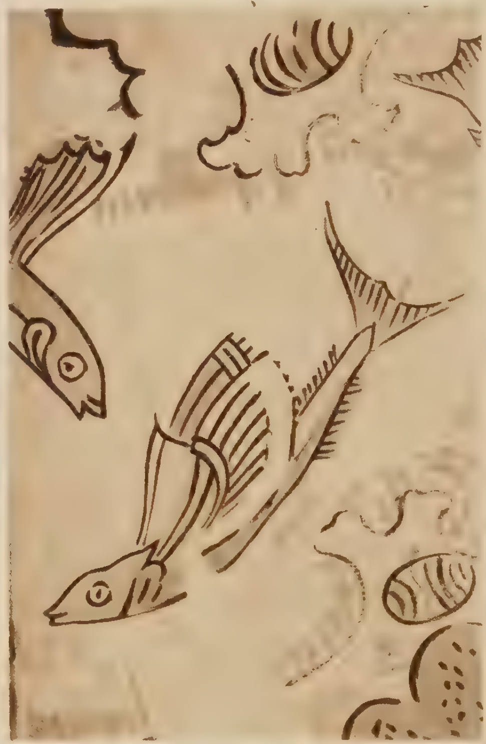


ORIGINAL FAIENCE OF FLYING FISH IN MUSEUM AT CANDIA IN CRETE

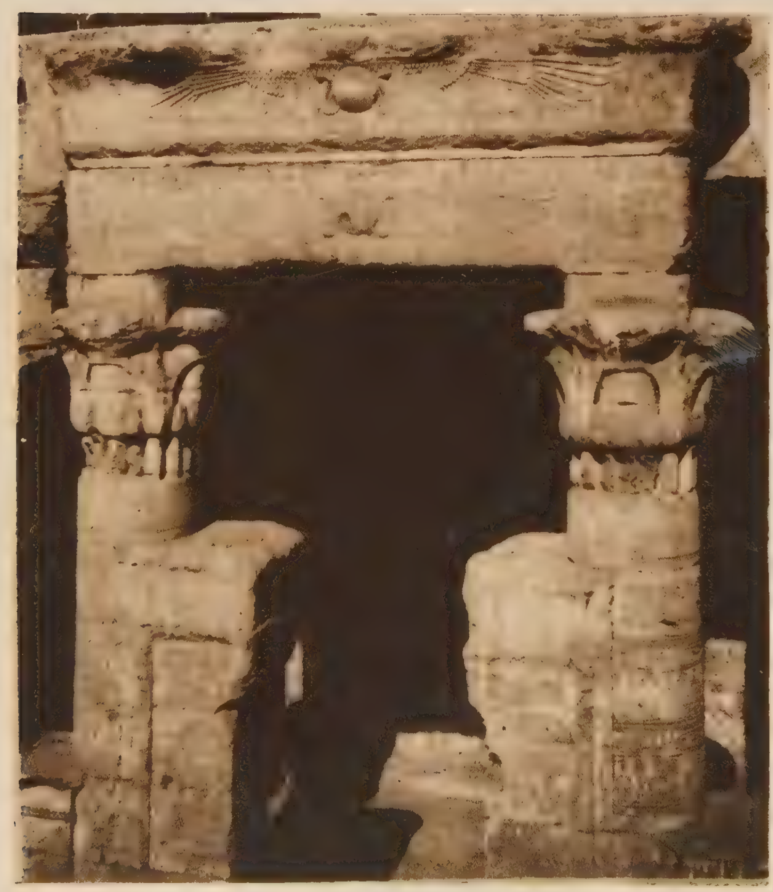
NEARLY two thousand years before the beginning of the Christian era (about 1800 B.C.), the people of the Island of Crete, at the eastern end of the Mediterranean, made representations of Flying Fish in faience (glazed pottery).

These records are preserved in museums. Those presented on this page (above), which look so much like monoplanes, were discovered by archaeologists in Temple repositories in the Palace at Knossus on the Island of Crete.

The flying fish (right), are in a portion of a fresco (1600 B.C.) from the Phylakopi in Melos.



ORIGINAL IN NATIONAL MUSEUM AT ATHENS

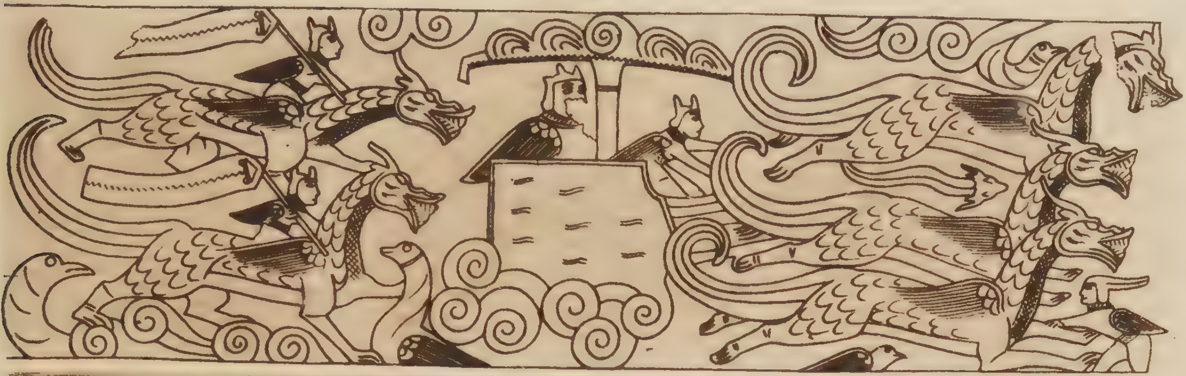


In Egypt—upwards of 4,000 years before Christ—there developed in the Valley of the Nile a civilization which worshipped a "Winged Sun." This appears over the entrance to Royal Tombs, in recognition of the Sun God, *Ra*.

Over the entrance (left), of an Egyptian Royal Tomb built about 2000 B.C. and recently excavated near Thebes, are two of these "Winged Suns," one above the other.

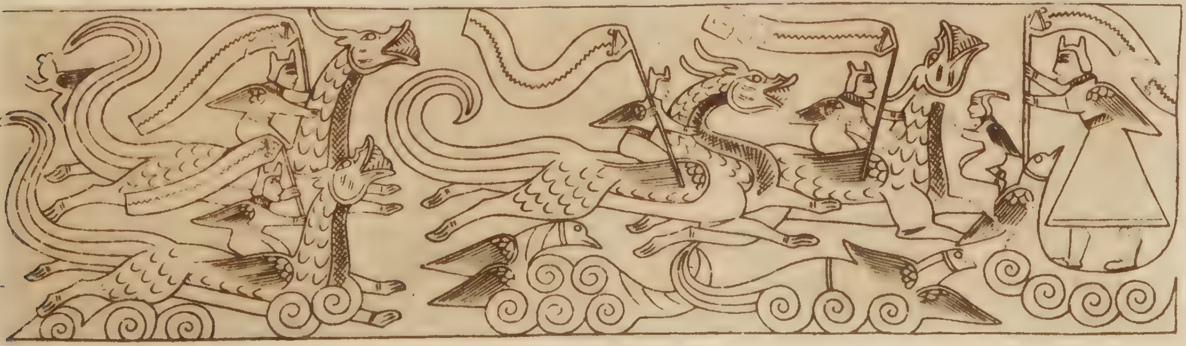
Photographs on this page are from the Collection of the Metropolitan Museum of Art in New York.

BIRD-MEN *in* CHINESE *Manuscripts* (*Bamboo*)—1766 B. C.

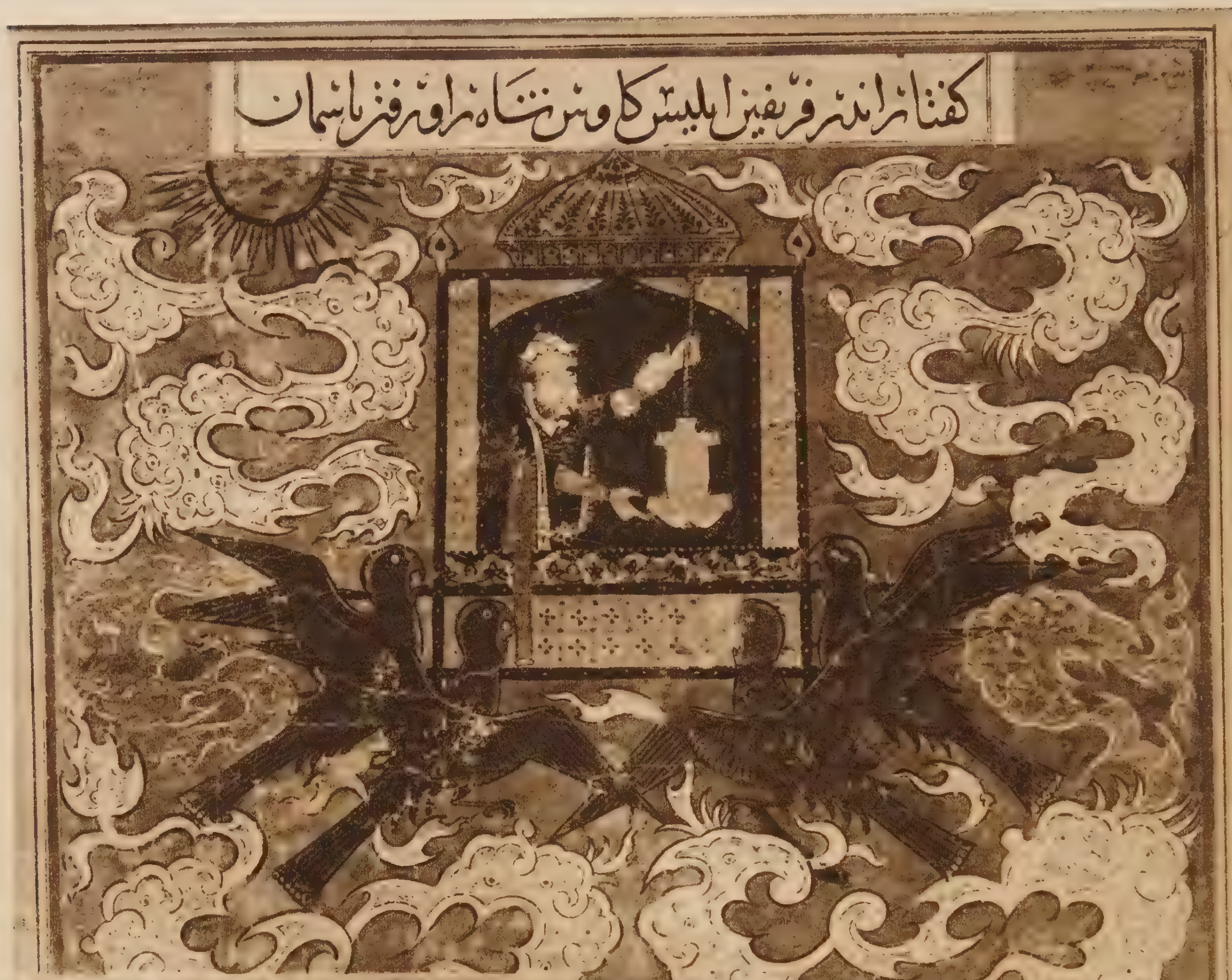


KITES, as precursors of airplanes, first appear in Chinese annals at a very early date, centuries before our era. Chinese scholars who kept the records frequently refer to them. The earliest kites were used for military signalling—first recorded in warfare in the life of Han Sin (died in 196 B. C.), one of the Three Heroes who assisted in founding the Han Dynasty. General Han Sin, plotting to tunnel into Wei-yang palace, flew a kite to measure the distance to it. The picture above is a scene from a "Chinese Painted Roll on Silk" in the Collection of Berthold Laufer, distinguished Curator of Anthropology in the Field Museum of Natural History in Chicago, whose records on "*The Pre-History of Aviation*" are a work of profound and invaluable scholarship.

This Bas-relief is a gravestone in Shan-tung, China, made in the Han period (2nd Century A. D.), showing "Aerial Contest of Dragon Chariot and Dragon Riders." A winged god floats through the clouds in a Flying Chariot.



FLYING CAR *of* "Builder *of* TOWER *of* BABEL"—1500 B. C.


کفتار اندر فریفتن ابلیس کاوس شاه را و رفتن باسمان

HERE, again, we find Kai Kaoos, or Kai Ka'us (1500 B.C.), Flying King of Persia, in his proper chronological place. He was second of the dynasty called Kaianides, a deep student of astronomy, and built great observatories on the Tigris river and at Babel.

Some chroniclers make Kai Kaoos the builder of the Tower of Babel which figures in Biblical records. They further claim that he flew from the top of that tower on his aerial journey in the Eagle-drawn Flying Throne (described on page 66).

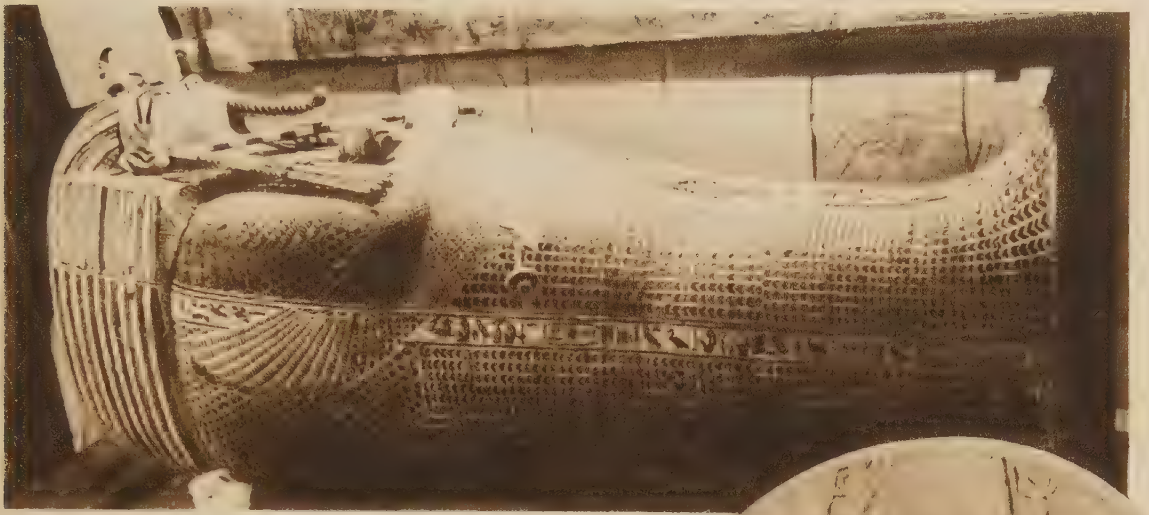
Firdausi, "The Homer of the East," famed Persian poet who rhymed Persian history in the "*Shah-na-meh*," or Book of Kings (990 A.D.) quotes the Demons who suggested flight to Kai Kaoos as saying:

"Thou art great as King can be,
Boundless in thy majesty;
What is all this earth to thee,
All beneath the sky?

Peris, mortals, demons, hear
Thy commanding voice with fear;
Thou art lord of all things here,
But, thou canst not fly!"

ORIGINAL MANUSCRIPTS IN ALEXANDER SMITH COCHRANE COLLECTION IN THE METROPOLITAN MUSEUM

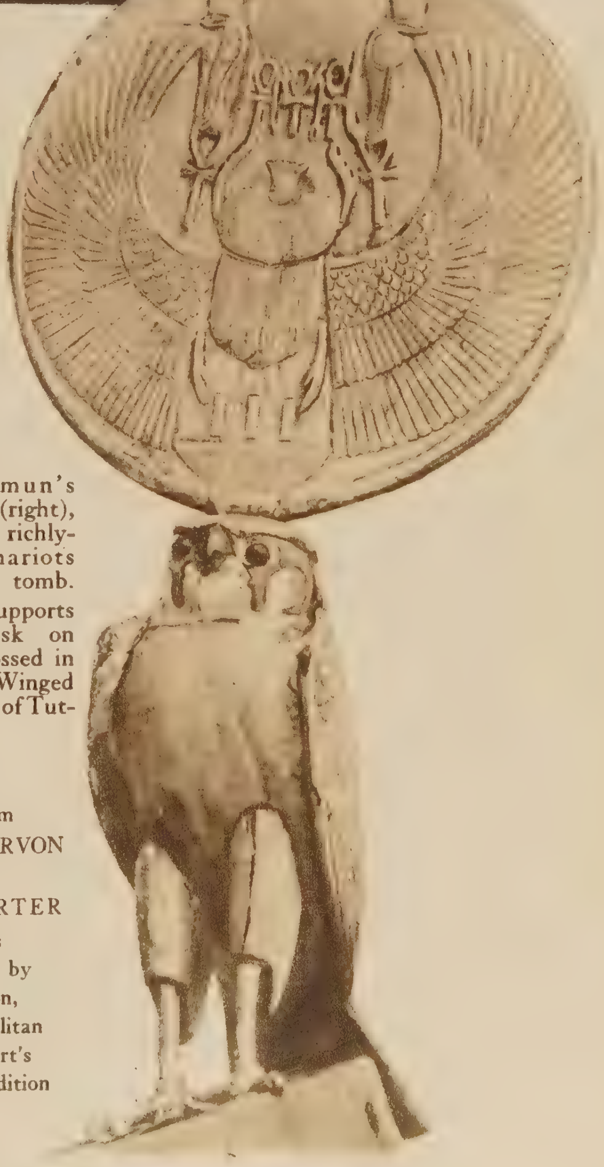
DISCOVERIES *at* Tomb *of King* TUTANKHAMUN—1355 B.C.

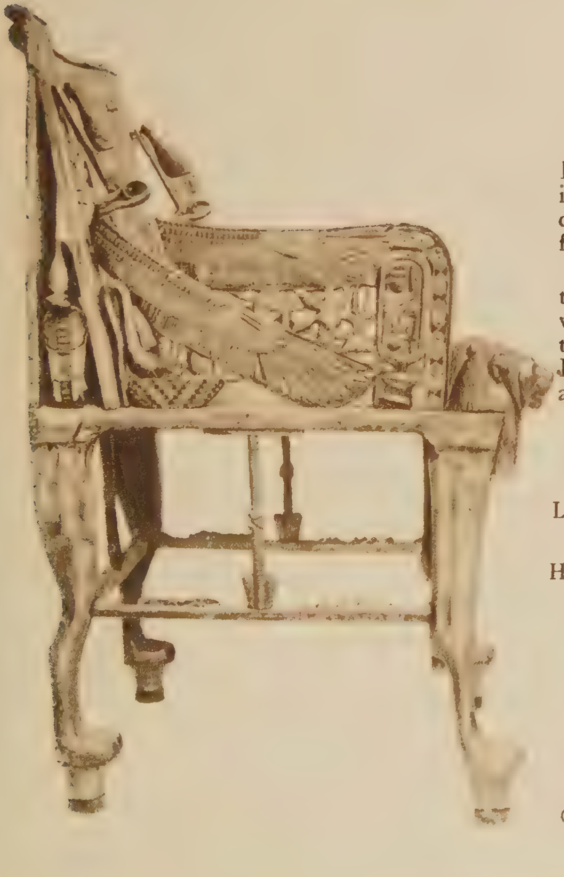


THESE records are from the explorations and discoveries of Lord Carnarvon, of England, and Howard Carter, the British archaeologist, at the tomb of King Tutankhamun of Egypt (1355 B.C.) at Luxor, near Thebes.

This is one of the great archaeological finds of the ages. This tomb had lain practically untouched for over 3300 years. Vast wealth of material was found in which winged motif abounds.

Tutankhamun was "the Son of the Sun." His mummy case is covered with wings. His royal insignia, proclaiming him a descendant of the Sun, is largely composed of wings. Note how many times wings appear in the Royal Chair.





Tutankhamun's Royal Ensign (right), is from the richly-decorated chariots found in the tomb.

The Hawk supports the solar disk on which is embossed in thin gold the Winged Royal Insignia of Tutankhamun.

Records from
LORD CARNARVON
and
HOWARD CARTER
Collections
Photographed by
Harry Burton,
of the Metropolitan
Museum of Art's
Egyptian Expedition

© Wide World

PHARAOHS *and* RAMESES *with* ROYAL *Insignias of* FLIGHT

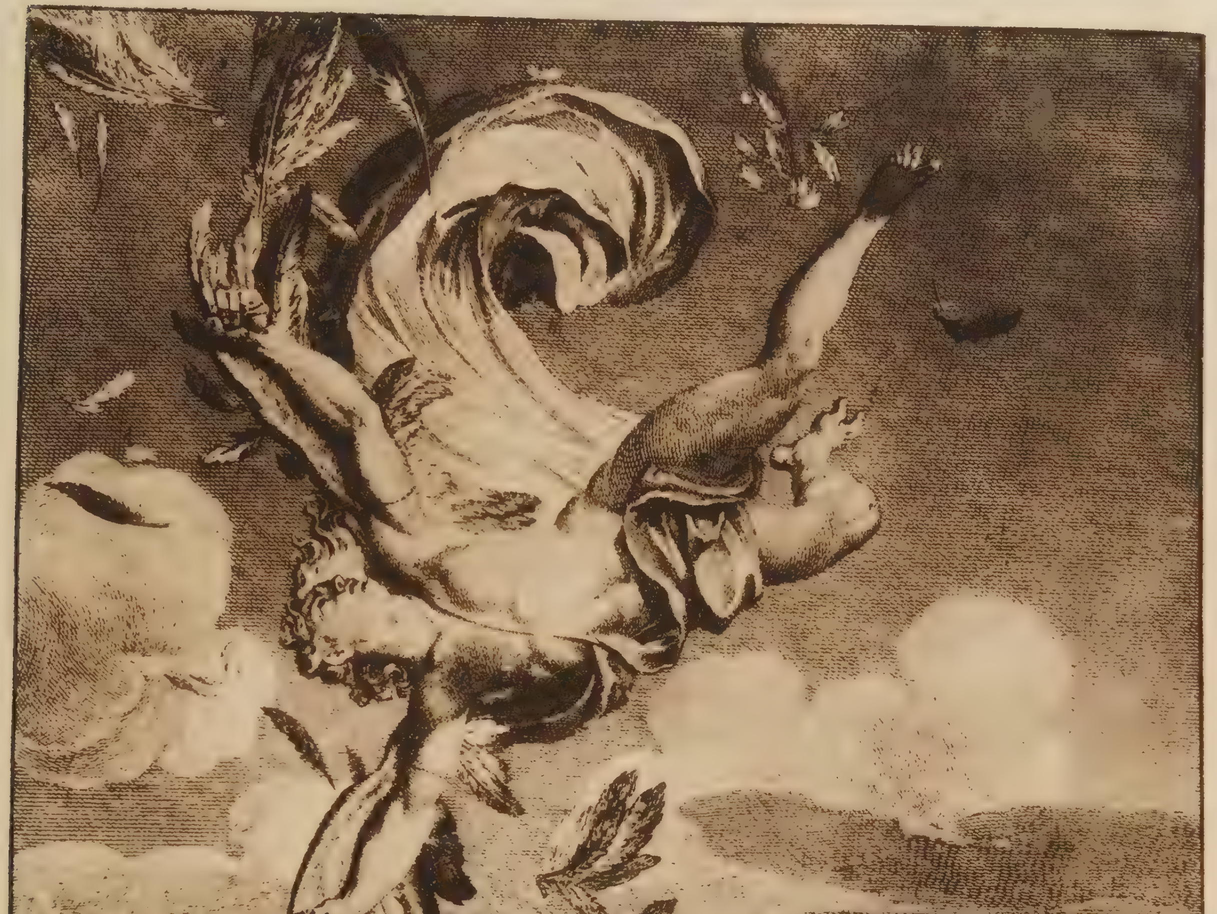
ROYAL BREASTPLATE BURIED WITH THE EGYPTIAN PHARAOH

THE wings of Tutankhamun are shown in this pectoral, or breastplate, which was a part of the royal accoutrements of the Egyptian Pharaoh, and was buried with him. Rich gold and priceless gems form the insignia of the King, topped by a portrait head of Tutankhamun. Photograph from Collection of Times Wide World.

RAMESES III—CARVED UPON THE WALL OF HIS TOMB NEAR THEBES

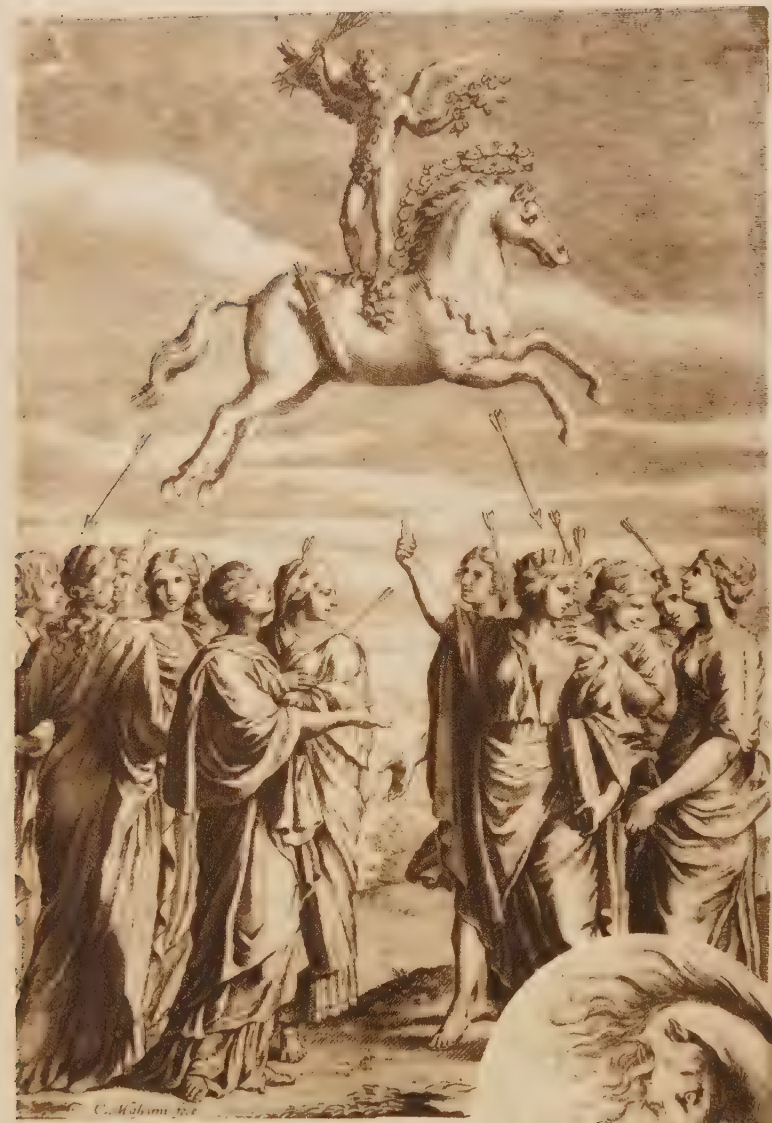
More than a century-and-a-half later Rameses III (1200 B. C.), ruler of Egypt, still preserved the winged motif in his royal insignia. This portrait figure of the Monarch with wings is now in the Museum of the Louvre in Paris.

GREECE *Records* HUMAN FLIGHT *in Mythology*—1100 B. C.



LET us now delve into some of the Greek Myths. Daedalus (1100 B.C.) built the famed Labyrinth of the Minotaur for King Minos of Crete. He lost the favor of the king and was imprisoned in a tower. Escaping, he fabricated wings of feathers for himself and Icarus, his young son. These wings were secured with thread and fastened on with wax. Daedalus charged Icarus to fly near him, "neither too high or too low," but Icarus, exulting, soared upward too near the sun, which melted the wax. He lost his wings, fell into the sea—and was drowned. Daedalus buried the body and called the land *Icaria*.

WINGED HORSE "*Pegasus*" *Which* LIVES *Through the* AGES



THE Story of Pegasus is another Greek classic of flight. When Perseus cut off Medusa's head (Page 43) the blood sinking into the earth produced the winged horse Pegasus. Minerva caught and tamed him and presented him to the Muses. Pegasus served Bellerophon (Page 80) and later, Zeus, but primarily he was the horse of the Muses—Calliope, Clio, Erato and their six other sisters.

In this old print we see Puck (Cupid, Eros) on the winged steed, shooting his darts of love into the breast of the feminine sex. As the horse of the Muses, Pegasus always has been at the service of poets. Schiller tells a story of his having been sold by a needy poet and put to cart and plough. Not fit for such humble duties, his clownish master could do nothing with him. A youth stepped forth and asked to try.

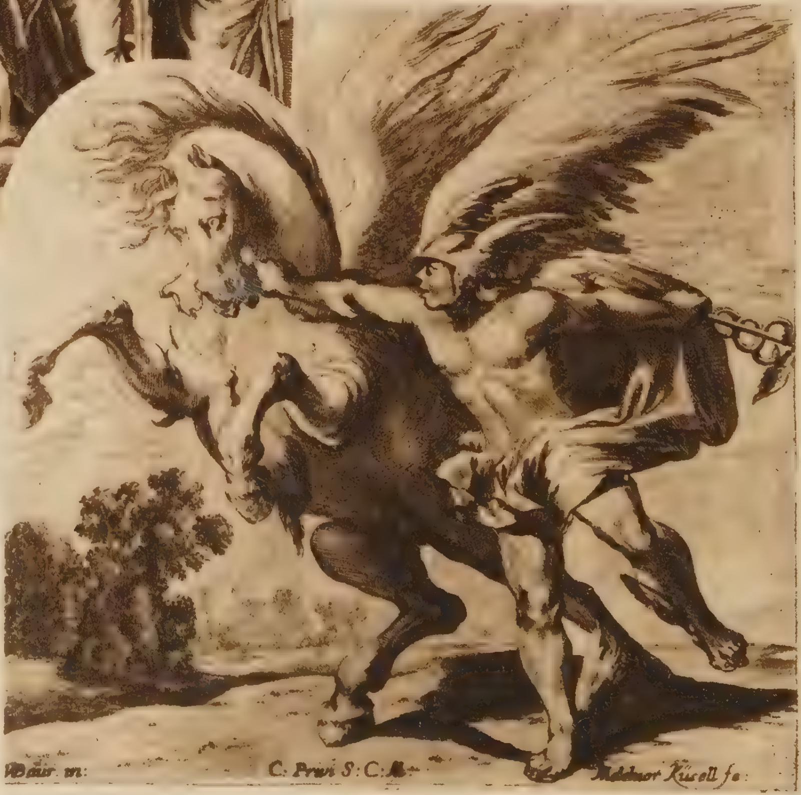
The youth stood on his back. Pegasus, at first apparently vicious and then broken-spirited, rose in kingly mein—a spirit, a god—then unfolded the splendor of his wings and soared into the skies.

Longfellow also puts into lyric verse an adventure of the winged horse in "*Pegasus in Pound.*" Shakespeare alludes to Pegasus in "*Henry IV.*"

Here we see the Latin god, Mercurius (Mercury) about to mount the winged horse Pegasus (right). Mercury was "God of Merchandise and Merchants" in Rome.

His noble temple on the Aventine became the headquarters of the corn trade, which was vastly important in the days of the Roman Empire. The winged steed Pegasus often served Mercurius in Italy, as he had the gods of Greece on Olympus.

These engraved prints are in the Collection of the Metropolitan Museum of Art.



PHAETON'S CHARIOT *Struck Down by* JUPITER'S THUNDER

HERE, we meet Phaeton, the son of the nymph Clymene by Apollo. A schoolfellow's jibes led him to question his mother about his paternity. She promptly sent him to his father. Apollo on his throne, surrounded by the Seasons, the Day, the Month, the Year and the Hours, received Phaeton cordially, confirmed his mother and offered anything in his power as proof.

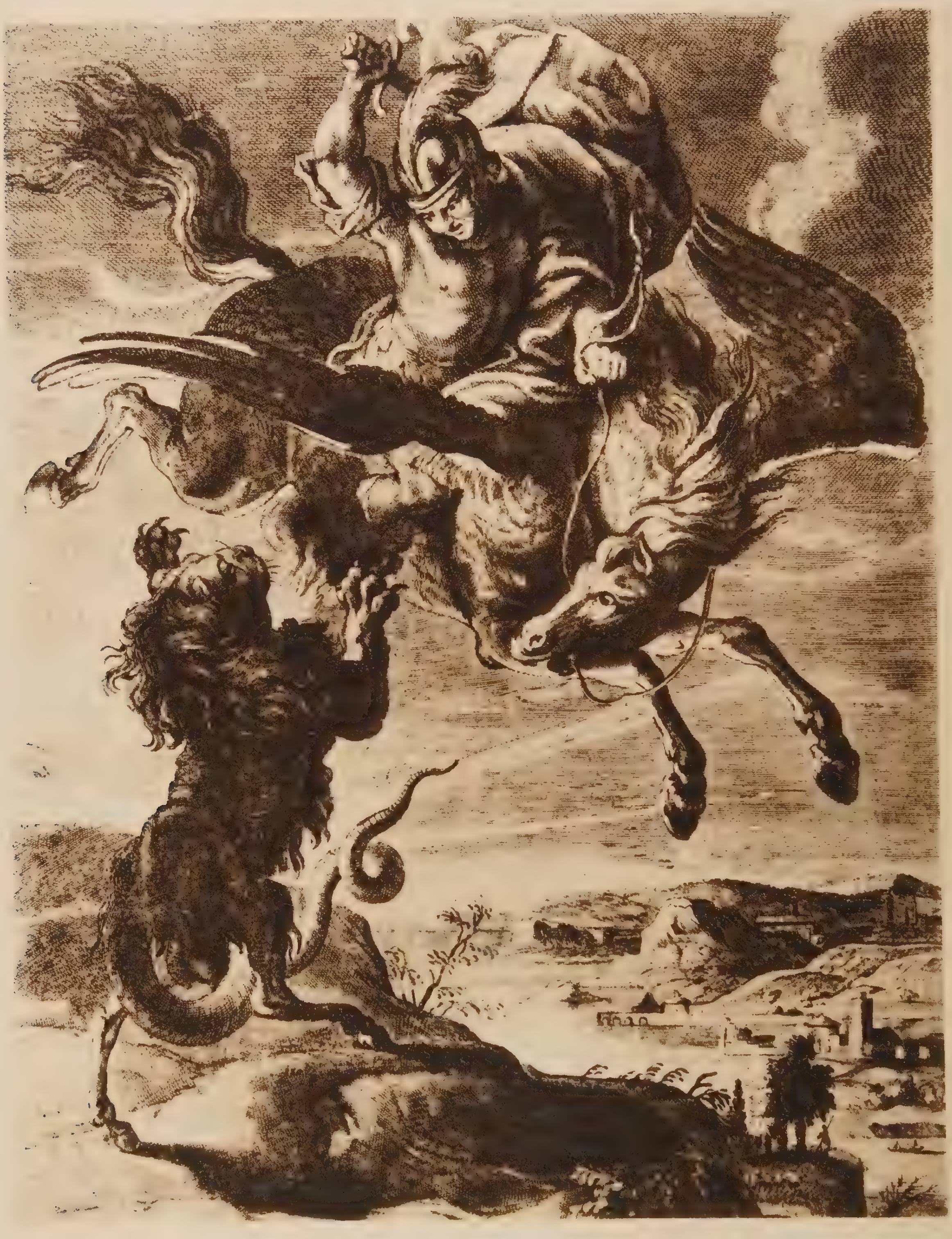
Phaeton asked to drive the "Horses of the Sun" for a single day. Repenting a rash promise, Apollo sought to warn his son, but Phaeton held to his demand. The Hours harnessed the winged horses and the agile youth sprang erect into the "Great Chariot of Gold"—and darted forward to cleave the clouds. They rushed headlong from the travelled road—and soon Earth and Sky were ablaze. His knees shook with terror. Clouds began to smoke and planets took fire. Mountains and forests burned. Mighty oceans and broad rivers dried up, great cities perished and whole nations were consumed. Amidst intolerable heat, Phaeton was hurled on—he knew not where.

The people of Ethiopia became black through blood forced suddenly to the surface. The Nile fled away and hid its head in the desert, where it remains concealed to this day. Earth, surrounded by waters but with head and shoulders bare, with husky voice called on Jove to loose his thunderbolts and strike down the reckless charioteer.

And Phaeton, his hair afire, fell like a shooting star into the river Eridanus. Italian naiads reared a tomb to him, with this epitaph: "Driver of Phoebus' chariot, Phaeton—Struck by Jove's thunder, rests beneath this stone—He could not rule his father's car of fire—Yet was it much so nobly to aspire."

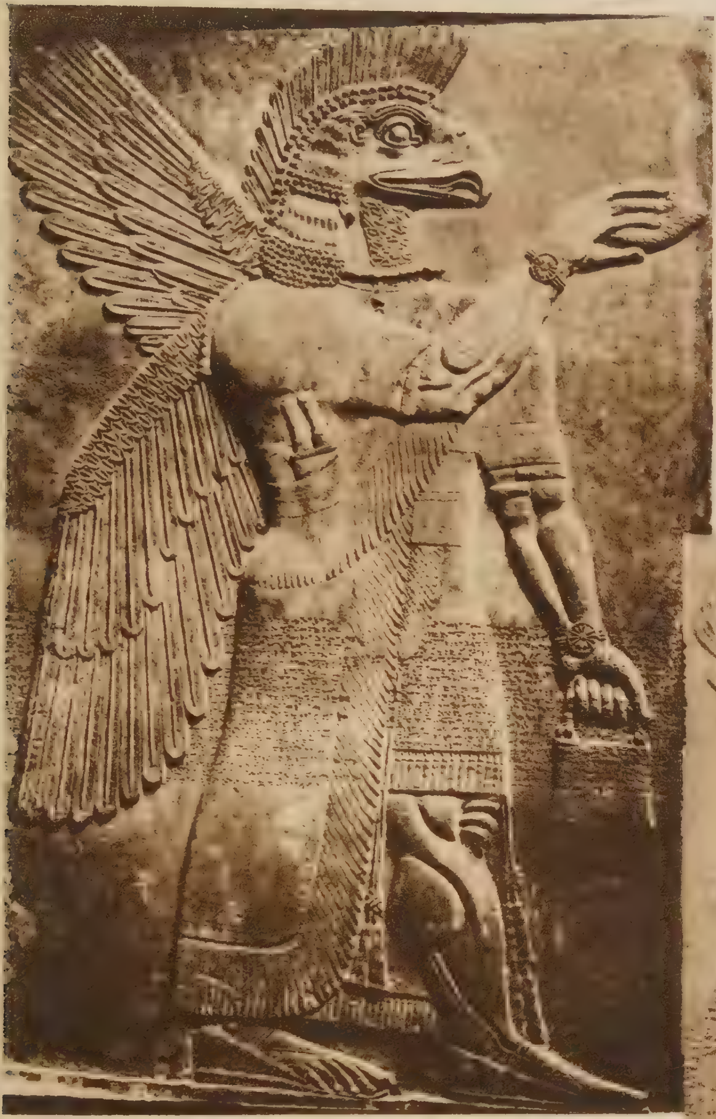
"Fall of Phaeton" (left) is from famous painting by Cornelis van Haerlem.

BELLEROPHON FIGHTS *the* CHIMERA *in Ancient Greece*



THIS is the tale of the Chimera, a fire-breathing monster, which ravaged Lycia. King Iobates sought its destruction. The gallant young hero, Bellerophon, brought letters from his son-in-law Proetus to Iobates, which recommended the young warrior highly—but ended by asking Iobates to put him to death (because of Proetus' jealous suspicion of his wife, Antea.) Iobates sent Bellerophon to fight the Chimera. The latter secured the services of Pegasus, the winged horse (see Page 78), and easily killed the Chimera. He attempted to fly to Heaven on his winged mount, but Jove sent a gadfly to sting Pegasus. The winged horse threw his rider, who finally perished miserably.

Winged BULL *and* IDOLS *in* RUINS *of* ASSYRIA—900 B. C.

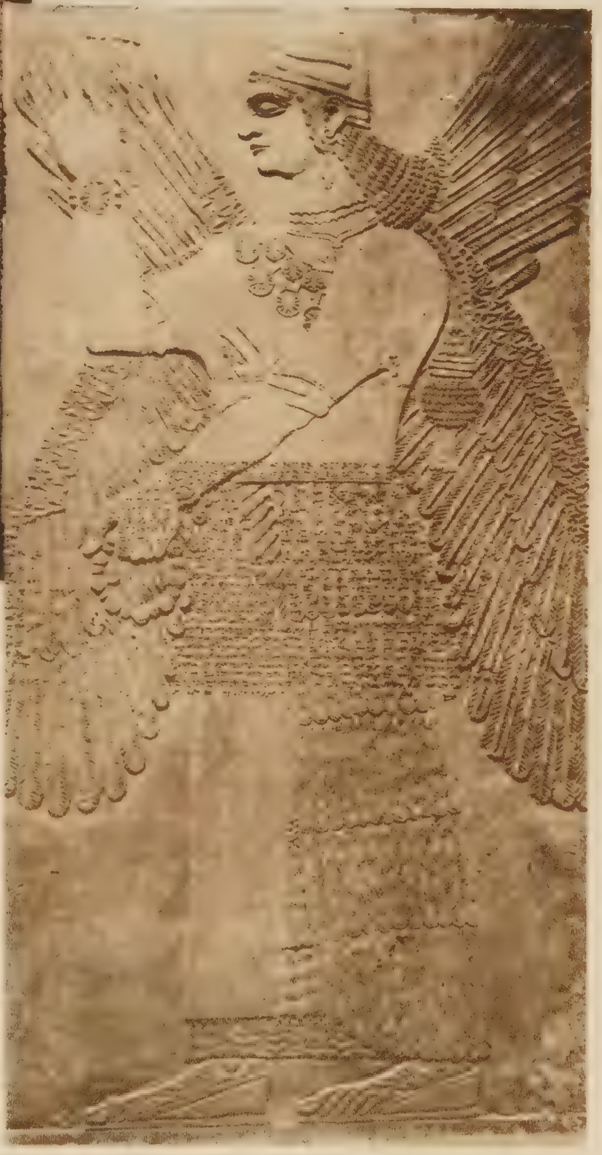


THE Assyrian deities on this page are from ruined temples and tombs unearthed by archaeologists in Mesopotamia.

Here is Ashur, chief of Assyrian gods (left), and his consort, Ninlil (below). These were patron deities of the City of Assur, ancient capital of Assyria, first mentioned in the 46th year of the Dungi of Ur (2376 B.C.).

The Assyrian version of the Epic of Creation, graven on stone tablets (2000 to 1800 B.C.), gives Ashur the place as leader of the gods which in the Babylonian version is granted to the Great Marduk.

Ninlil has the head and face of a beautiful woman. Ashur has the head of a bird, which served him well in his great conflict with the eleven monsters created by the female dragon, Tiamat, in her attempt to overthrow the "Gods of Light and Order."



WINGED COW with Human Head Found in Assyrian Excavation

Reliques on these pages are from Near East Collection in BRITISH MUSEUM

Winged GODS *of the* CIVILIZATION *in* GREECE—900 B. C.

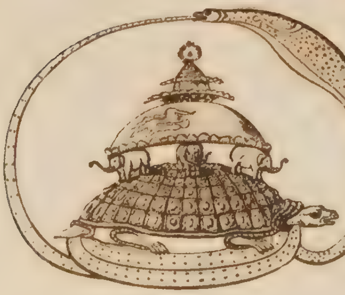
WINGED DEMI-GODS AND HEROES OF THE ANCIENT
Original in Marble Relief in the Torlonia Palace

HERMES OF GREEKS
MERCURY OF ROMANS
(About 900 B.C.)

Fresco by
RAPHAEL
in the
Chigi Palace
in Rome

Table of the
TWELVE GODS
in the
LOUVRE

Ancient Pagan Theory
of the Earth supported
on the back of a
Giant Tortoise



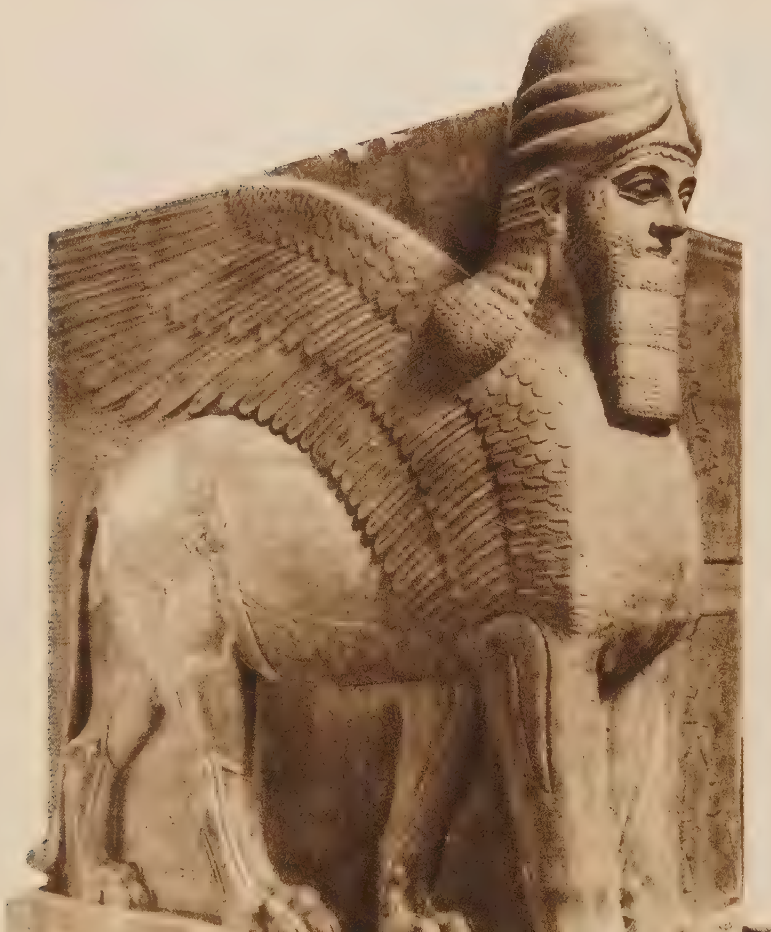
ROME *is* FOUNDED *with its* WINGED DIETIES *and* HEROES

HESIOD (800 B.C.) RECORDS "CREATION OF THE GODS"
Atlas Supporting the World on His Shoulders (below)

SUPREME RULER OVER THE EARTH
Zeus instructing Eros on the
Winged Paths of Love

Fresco By RAPHAEL
in Chigi Palace at Rome

Winged LION *in* PALACE *of* KING *Assur-nasir-pal*—885 B. C.



THIS Winged Man-headed Lion is one of the Assyrian antiquities. It was excavated by Sir A. H. Layard, of England, from ruins of the Palace of Assur-nasir-pal, King of Assyria (885-860 B.C.).

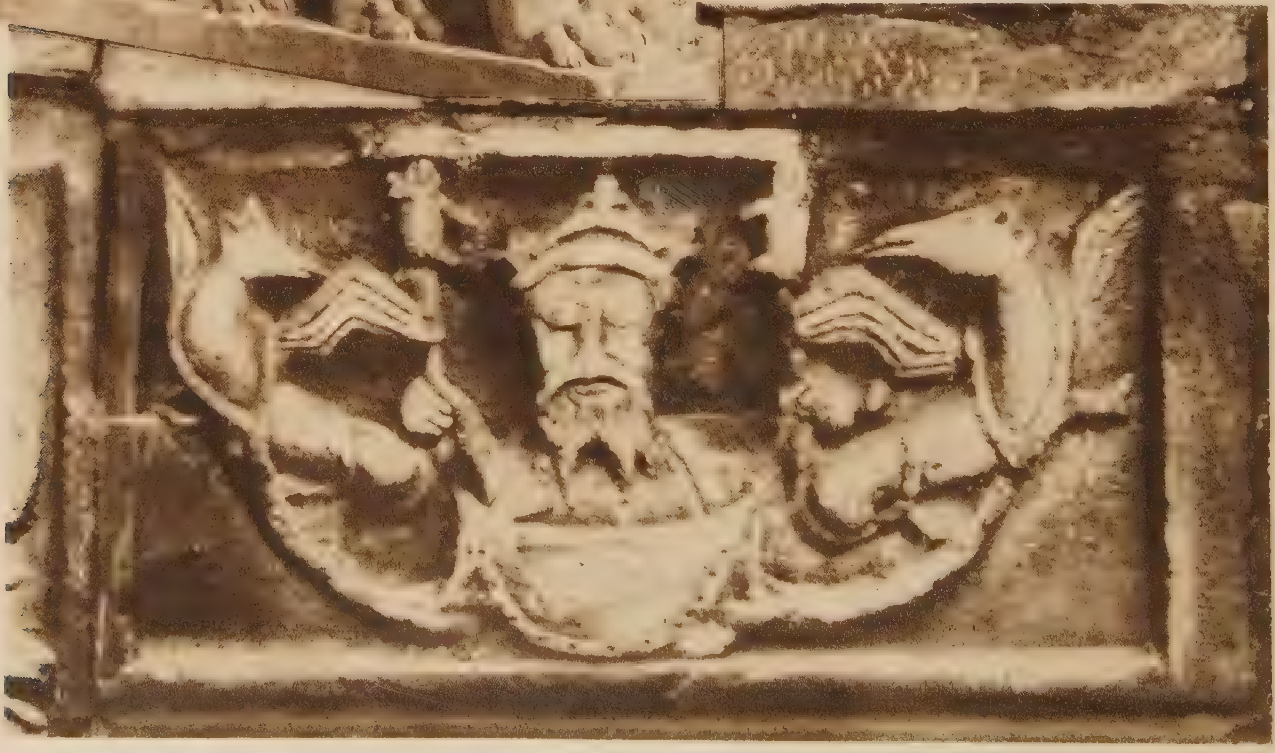
Record should be made here also of the Scandinavian and Teutonic mythologies. The Vikings and the Valkyries are rich in winged legends, as they appear in later centuries. The Flying Warriors in the days of Odin are still a part of the folklore of these countries.

We present below a record from Teutonic legend. It is a relief found at Remagen on the Rhine, in Germany (dating about 300 B.C.) known as "*Der Fliegende Held Alexander.*"

Alexander is the "Flying Hero" of the folk tales. He was carried into the skies in a light cabinet by flying dragons in one of his exploits of magic.

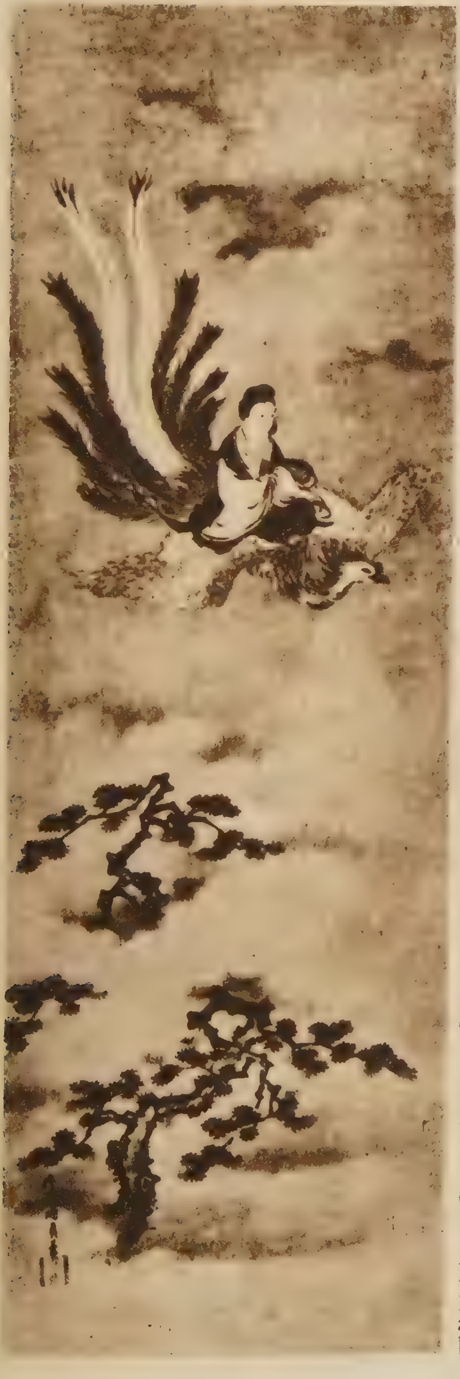
There is here the closest connection with Alexander the Great (356–323 B.C.), undoubtedly the inspiration of the German legends. The mighty King of Macedon is "singular among men of action for the imaginative splendours which guided him and among romantic dreamers for the things he achieved." (14th Edition *Encyclopedia Britannica.*) : He built up tremendous power in Western Asia, even conquering considerable portions of Persia and Northern India.

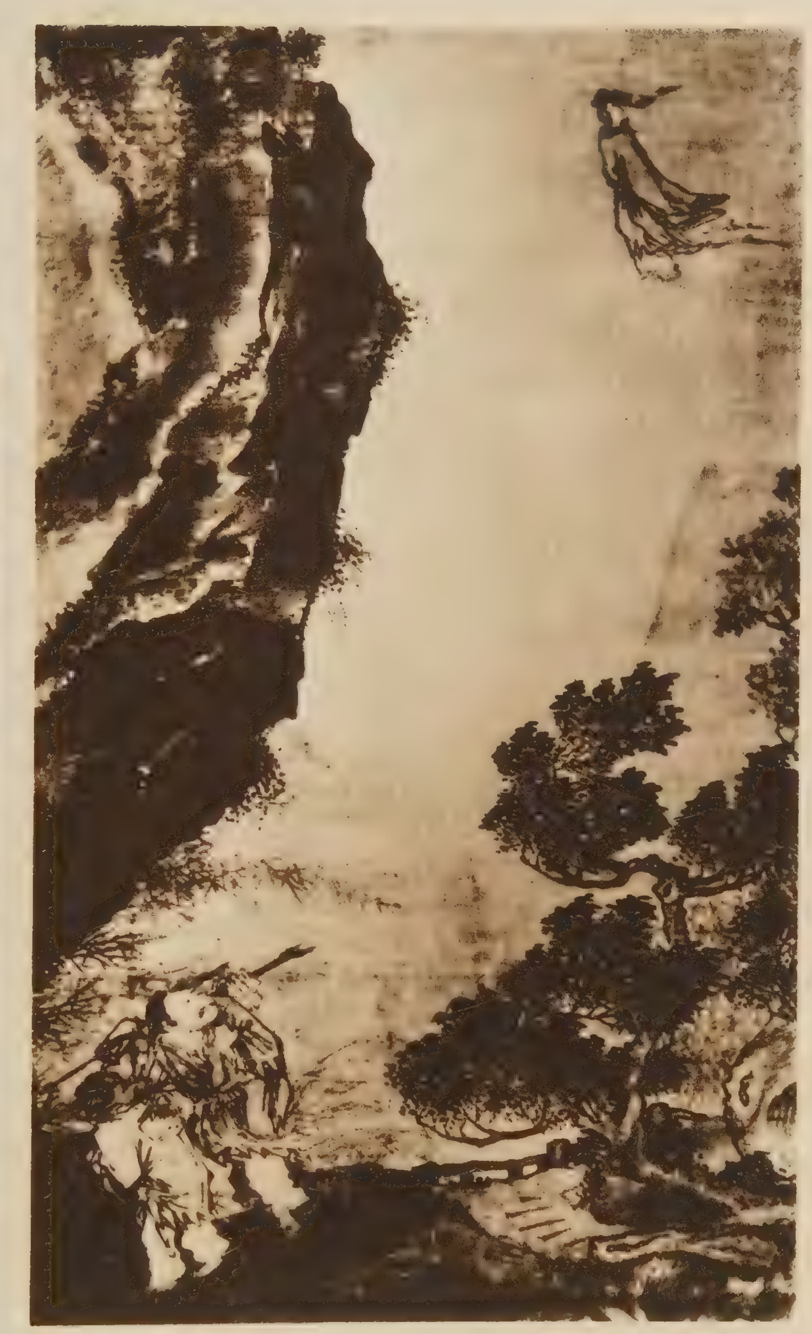
His story made its way into Europe extensively through Latin versions of the pseudo-Callisthenes and especially through a Latin version of his feats printed at Strasbourg in 1486.



"QUEEN MOTHER *of* CHINA" *Riding Her Peacock*—604 B. C.

Out of Greek mythology into Chinese mysticism, we find the Taoism of Lao Tzu (born 604 B.C.), which today has millions of followers in China and the Orient. The Chinese print below shows a Taoist lady immortal, "Weiwobo, Queen Mother of the East," riding through the air on the back of a sacred peacock. She symbolizes the beauty of eternal youth. The original is in the notable collection of the Boston Museum of Fine Arts.





TAOISM sought an "Elixir of Immortality" many centuries before Christ. Liu An, alchemist, (200 B.C.) discovered an elixir which, when he drank it, transported him to Heaven in broad daylight. He dropped the vessel containing it. The dogs and poultry sipped the dregs and promptly sailed away after him.

Li Shao-kun, magician of Emperor Wu of the Han dynasty (140-87 B.C.) proclaimed: "I can rein the Flying Dragon and visit the extremities of the earth. I can bestride the hoary crane and soar above the nine degrees of Heaven."

The print (above) is in the General Munthe Collection in the Los Angeles Museum—possibly that of Ma Tse-jan, a Taoist mystic of wide repute as a physician early in the Christian era, who was ultimately taken up to Heaven alive. The Taoist saint is flying from cliff to cliff, while earthbound wanderers below gaze in bewilderment.

King SOLOMON *Offers* FLYING CHARIOT *to Queen of* SHEBA

SOLOMON IN ALL HIS GLORY IS PORTRAYED IN DORE'S MASTERPIECE
Ancient Coptic Manuscript records that he presented a "Flying Chariot" to Queen of Sheba (see page 88)

PART IV

ORIGIN *and* EVOLUTION *of* HUMAN FLIGHT

EGYPT, GREECE *and the* ROMAN EMPIRE *to the* MIDDLE AGES

THE classical background of this modern "Aerial Age" has been set. The aspiration of mankind has been firmly established in the human mind. We find Bladud (863 B.C.) seeking to scale the sky until "he brake his necke because he soared too high." Ahikar sends up boys on the backs of eagles to solve the riddles of Pharaoh (500 B.C.). The Chinese are experimenting with kites (400 B.C.). Archytus of Tarentum (390 B.C.) is creating his "wooden dove."

Scheherazade appears (900 B.C.) and unfolds fantastic tales for *One-Thousand-and-One Nights* to save the virginity and life of her sister, "condemned to die at cock-crow," with flights of imagination which hold the old King spell-bound. We listen to the adventures of *Sinbad the Sailor*, who fastens himself to the leg of a huge bird and flies to the Valley of Diamonds, from which he escapes in the talons of an eagle.

Empedocles is caught within the crater of Mt. Etna during an eruption and "flies on winged sandals" to safety. Abaris, according to Diodorus of Sicily, "travels around the world on an arrow of gold." Cassiodorus and Glycas tell of "mechanical birds that flew and sang and even laid eggs." Ayar Utso, in the Inca civilization of Peru, "grew wings and visited the sun." Wieland, the Teuton, "made himself a dress with wings and rose against the wind." Hanouam, the Hindoo, "fitted himself with wings and sailed the air." Ilmarinen, the Finlander, "forged an eagle of fire."

Out of all this emerges the historical era, with its authenticated records. Rome is founded (753 B.C.); Nineveh falls (608 B.C.); Babylon falls (538 B.C.); Alexander the Great starts on his "Conquest of the World" (336 B.C.); Hannibal crosses the Alps (218 B.C.); the first triumvirate in Rome with Pompey, Caesar and Crassus (60 B.C.).

Here occurs the most momentous event in human history—*Christ is born.* Modern Christendom is founded and the world is re-created by a new system of civilization, out of which this New Age of the Air slowly evolves through the explorations, discoveries and genius of man.

Simon the Magician, in the third year of the reign of Nero (57 A.D.), attempts a public exhibition and falls headlong in the Forum at Rome, "breaking his neck." The Saracen of Constantinople, in the reign of Emperor Comnenus (1100 A.D.), jumps from the Tower in the Hippodrome, in the presence of the Sultan of the Turks, "and breaks his bones" at the time when Leif Ericson, the Norseman, is on his voyages to America. Oliver, the monk of Malmesbury (1065 A.D.), "makes himself wings and attempts to fly," jumping from a tower and sustaining injuries which cause his death—as William the Conqueror is on the road to the Battle of Hastings in the Norman Conquest of Britain.

We enter the period of the Magna Charta, the first bill of human rights; the Great Crusades, the Inquisition in Spain, and the establishment of the English Parliament—all during the life-time of Roger Bacon, the scientific friar (1214-1294 A.D.), who gave to the world the first scientific prophecy of human flight in which he set forth a rational idea of a mechanical principle—"an engine with wings."

"WISEST MAN *in the* WORLD"—KING SOLOMON—974 B. C.

THAT Solomon "in all his Wisdom" foresaw the Aerial Age is proved in the records on this page.

In the "*Kebra Nagast,*" Coptic manuscript, is preserved the story of the establishment of the Hebrew religion in Ethiopia, the land of the Queen of Sheba.

We find this remarkable record in Chapter 32: "And he (Solomon) went into his house and gave unto her (the Queen of Sheba) whatsoever she wished for of splendid things and riches . . . . *and a vessel wherein one could traverse the air* (*or winds*), which Solomon had made by the wisdom God had given unto him."

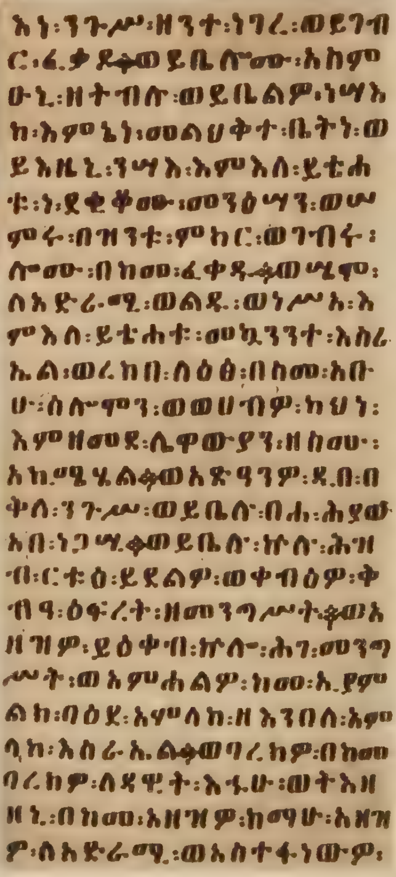
The story of the visit of the enchanting Queen to the mighty King of Israel, of whom she had heard afar, is told in the Bible in *I Kings, 10:13.* Here is a reproduction of a portion of the original Coptic Manuscript from which this record is taken.

From Far Ethiopia, the Queen of Sheba journeyed with her retinue to Jerusalem to visit the "Wisest Man in the World." Solomon received the Queen in kingly state. The records show they discoursed on varied and learned subjects—from sex psychology to aviation. His great learning fascinated her and she remained his guest for many months.

The time of her departure drew nigh. Solomon arranged a splendid banquet in her honor. And in the end—he won the heart of the Virgin Queen—and took her to wife.

When she finally left to return to Ethiopia, he loaded her with presents, as told here, including the Flying Chariot. From this union came Menyelik, who when grown was sent to visit his father. Solomon was delighted with his son and taught him from his wisdom.

King Menelik, of Abyssinia, today claims to be in the line of Menyelik, who later succeeded to his mother's throne.



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ዘኒ፡በከመ፡አዘዝዎ፡ከማሁ፡አዘዝ
ዎ፡ለአድራሚ፡ወአስተፋነውዎ፡

"FLYING RUGS" *and* EAGLES *in* ARABIAN NIGHTS—900 B.C.

THE "*Arabian Nights*" *Tales* (900 B. C.) actually record the folk lore of the Arabian nation as narrated where the common people met. They contain many allusions to flying magic.

Archaeologists and Arabic scholars for centuries have made translations of these ancient manuscripts with material expurgations.

The first European edition is that of Antoine Galland, noted French orientalist; it appeared in Paris in 1704. Lane, Torrens, Payne, Burton, Littman and Machen have since translated the "*Arabian Nights*," probably best known of all the collections of tales which have come out of the Orient into the Western World.

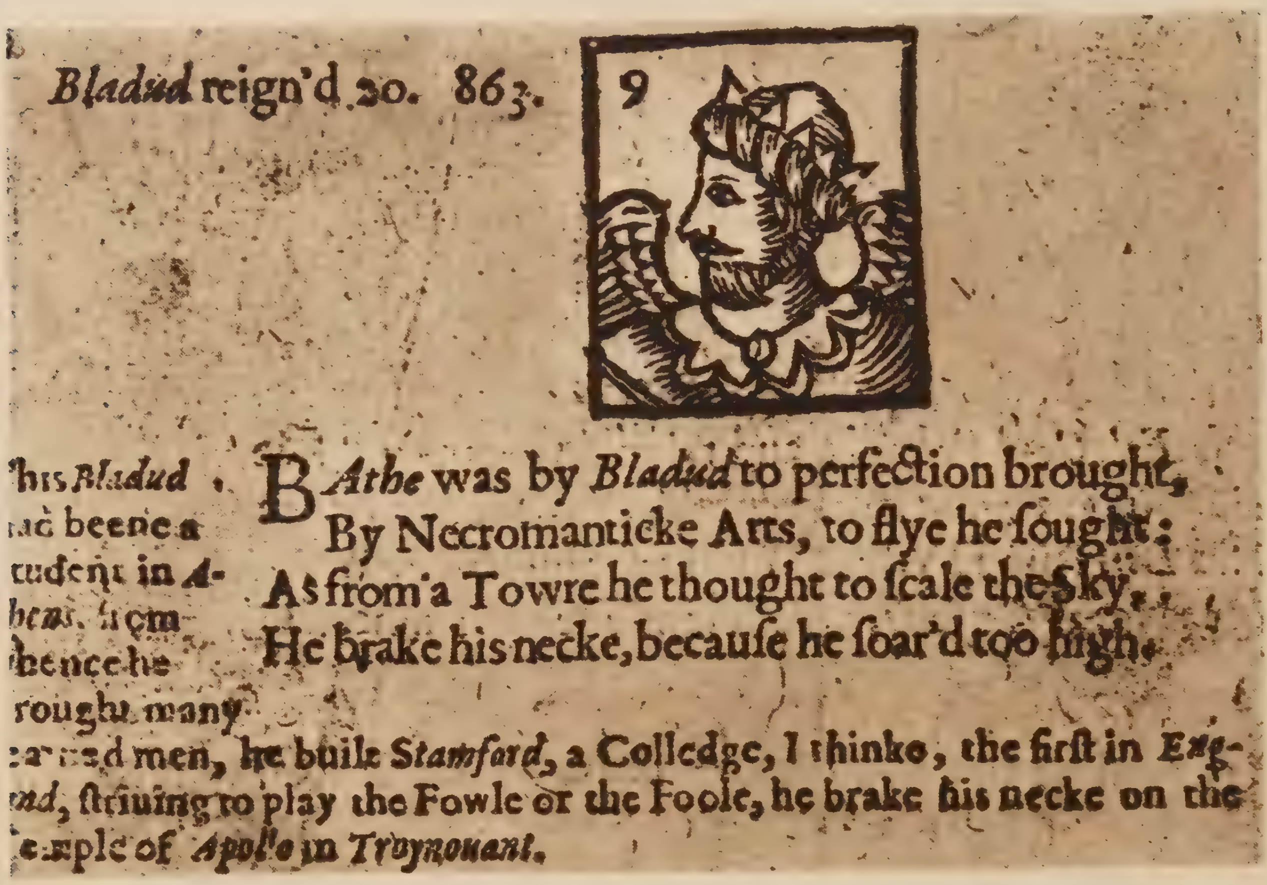
Here is a typical tale: Sinbad, the Sailor, went to sea in a great tub and was wrecked on a desert shore. Awakening from sleep, he noted near him the massive leg of an enormous Roc, a huge bird capable of carrying a man. In the picture (below) Sinbad is fastening himself to the Roc's leg by his unwound turban. The Roc flew away with Sinbad to the Valley of Diamonds. Sinbad filled his pockets with so many diamonds that he could not run from an Eagle, which caught him up in its mighty talons and soared away to its eyrie (see picture above). Chance passers rescued Sinbad, who, after sharing his diamonds with them, had still ample wealth to live a life of ease in romantic Bagdad, where he told the story to Hindbad the Porter.

FLYING
RUG
from
the
HENRY
HOLT
Collection
©

The Flying Carpet of the "*Arabian Nights*" (above), with its human passengers returning to Bagdad after a night flight to lands afar, is typical of the magic of these tales. It appears many times in different tales which Scheherazade told to hold the attention of King Shahriyar and to save her own life.

The girls were daughters of the Grand Vizier of Shahriyar. The elder daughter, who was versed in the picturesque tales of the East, became the bride of the king. It was the King's custom to slay his virgin brides at daybreak after the nuptial night. Scheherazade had her younger sister, Dunyazade, attend her and suggest the narration of one story after another to distract the Monarch from his fell purpose at cock crow. She was successful in this through "*A Thousand Nights and One Night.*"

RECORD *of* BLADUD, "*Flying* KING *of* BRITAIN"—863 B. C.



Bladud reign'd 20. 863.

9

B*Athe* was by *Bladud* to perfection brought,
By Necromanticke Arts, to flye he ſought:
As from a Towre he thought to ſcale the Sky,
He brake his necke, becauſe he ſoar'd too high.

his *Bladud*
ad beene a
tudent in *A-*
hens, from
hence he
rought many
earned men, he built *Stamford*, a Colledge, I thinke, the firſt in *Eng-*
and, ſtriuing to play the Fowle or the Foole, he brake his necke on the
emple of *Apollo* in *Troynouant*.

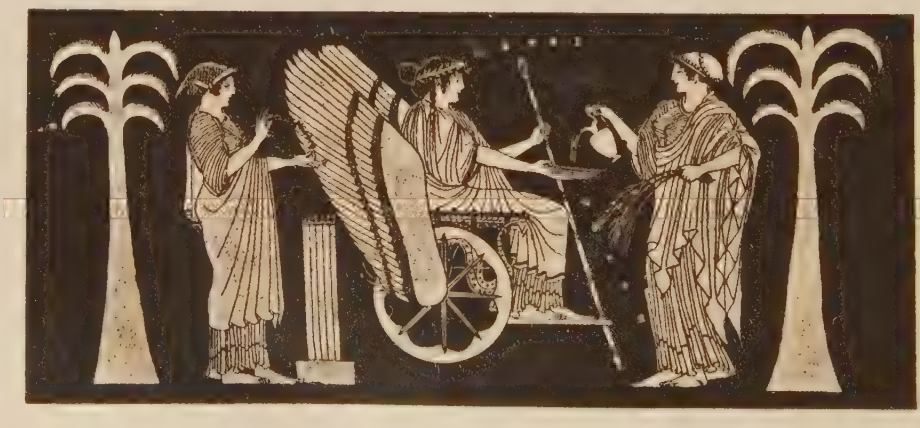
CARTHAGE was founded but fifteen years before the "First Briton to Attempt Human Flight" came to the English throne—King Bladud, whose twenty-year reign began in 863 B.C. Bladud essayed to fly from the Temple of Apollo, which he had built in Trinovantum (now London), the legend relates. He fell upon a church located where Westminster Cathedral now stands—and broke his neck.

A mighty monarch in his day, educated in Athens, he was father of King Lear. He founded the city of Bath and the First College in England at Stamford. King Bladud practised the art of necromancy, or magic, and taught it throughout his kingdom.

Bladud fashioned wings of feathers, somewhat after the manner of Daedalus centuries before, but these played him false. His tragic story is first recorded by Geoffrey of Monmouth in his "*Historia Regum Britanniae*" (written 1147 A.D.), which was widely circulated in manuscript but not printed till 1508.

The "*Chronicles*" of Fabyan (1516) first tell the tale in the quaint English of that day and make Bladud fall upon his temple of Apollo "and thereon was all too torne." The "*Chronicles*" of Harding (1543), Bale (1548), Stow (1567), Grafton (1569) and others corroborate the Bladud story, as does the "*Mirrour for Magistrates*" (1547) in verse. Our facsimile above is from John Taylor's "*Memorial of English Monarchs*" (1622).

Facsimile of the Departure of Triptolemus Pictograph on a Greek Vase in the Museum of Antiquities at the University of Leyden



Triptolemus in the Winged Car of Ceres (750 B.C.) on tour of "All Countries of the World" to spread Knowledge of Agriculture

WISE MAN *of* NINEVEH *Solving* RIDDLE *of* SPHINX—500 B.C.

THE ancient *"Story of Ahikar,"* Grand Vizier of Assyria, dates back to an Aramaic papyrus (500 B.C.) discovered by archaeologists in the ruins of Elephantine.

Shikar grew old and full of years and King Sennacherib desired the Grand Vizier to train Ahikar's nephew, Nadan, as successor. Young Nadan proved treacherous and finally ordered his uncle killed.

Straightway, there came a letter from King Pharaoh of Egypt, Sennacherib's brother, propounding the Riddle of the Sphinx. He requested Ahikar to evolve a plan for building a castle between Heaven and earth.

Nadan, now Grand Vizier, was utterly at a loss and King Sennacherib cried out for the dead Ahikar. In truth, the former Grand Vizier had not been killed, but hidden by a faithful servant.

Ahikar now came forth—to solve the Sphinx's riddle. He took young eagles and had them trained to carry boys upon their backs. The eagles gained in strength as the boys grew in size. They flew with long ropes tied to their feet. Ahikar and the boys then went to Egypt and demonstrated their ability to fly before Pharaoh.

The boys shouted from the air as instructed: "Bring bricks and clay, that we may build the king's castle here in the air." But Pharaoh, while acknowledging the riddle answered, decided not to build.

Ancient civilizations of the Western World—Indians, cave dwellers, Aztecs of North America; Mayas of Central America; Incas of South America—all these left their records of wings in their mysticism and mythology.

It is now believed that the Maya civilization on the Western Hemisphere goes as far back before Christ as that of the European and Asiatic people.

In the symbols and picture writings of these nations which rose and fell, centuries and milleniums before Europe had dreamed of Western Continents, we find winged figures.

Temple decorations and tomb walls display not only winged birds and animals which were worshipped, but winged spirits fitted for a higher than earthly plane. Today the idea of wings still lives on the totem poles of the Indians of Northwestern America and Alaska, a notable example of which (on the left) is in the Collection of the American Museum of Natural History in New York.

Ancient SCIENTISTS *Study* BIRDS *to Imitate* FLIGHT

THROUGHOUT this unfoldment of the "Origin and Evolution of Human Flight," we shall observe that man from the beginning of time has attempted to devise some means of imitating the birds. From primitive times to the scientific age of today, the study of birds has been the basis of the science of aerostatics.

Man first learned to walk upright—then to ride upon the backs of animals—to swim—and then to soar into the skies in emulation of the winged creatures, whose element it is.

Through the ages earth-bound mortals have had an instinctive desire to fly. We have seen how man first endowed his gods, demigods and supermen with the power to do what he yearned to do—*to fly*.

Our inspiration has been the eagle. The albatross, gull, even the dove, have played their part in man's design of human and mechanical wings. The mighty eagle still typifies the age-old human longing, until we of this generation have at last solved the secret of the birds of the air and brought into actuality one of the oldest and most persistent of human aspirations.

These specimens are in the Collections of the American Museum of Natural History in New York.

Birds inhabited the earth long before the coming of Man. Recent discoveries fix the Age of Man at "more than 1,000,000 years."

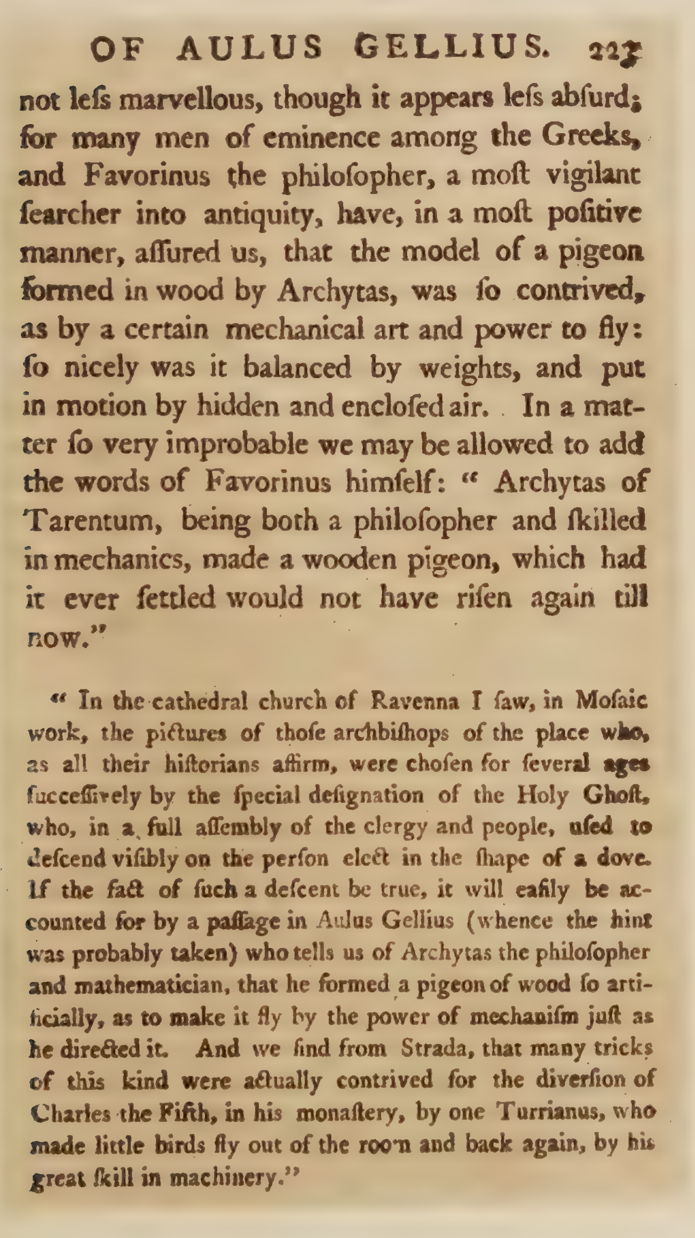
Scientists place the Age of Birds at "*more than 40,000,000 years.*" Flying reptiles, flying dragons, and flying bats appear in the Mesozoic Age.

Then came the First Bird, the *Archaeoptery*, the ancestor of the Vast Empire of the Clouds. For millions of years he has held his dominion against invasion, until, at last, today, he finds it conquered by man.

ARCHYTAS' "*Wooden Pigeon*"—*Friend of* PLATO, 400 B.C.

ARCHYTAS of Tarentum (428–347 B.C.), was a Greek philosopher, scientist, mathematician, and General of an Army. He was an intimate friend and disciple of Plato. Living a long and useful life of more than four-score years, he holds distinction through the ages for one unique accomplishment—he made a wooden pigeon "which flew by its own power."

Those who saw the bird perform were more concerned in its actual flight than in the mechanical principles by which this was accomplished.



OF AULUS GELLIUS. 223

not leſs marvellous, though it appears leſs abſurd; for many men of eminence among the Greeks, and Favorinus the philoſopher, a moſt vigilant ſearcher into antiquity, have, in a moſt poſitive manner, aſſured us, that the model of a pigeon formed in wood by Archytas, was ſo contrived, as by a certain mechanical art and power to fly: ſo nicely was it balanced by weights, and put in motion by hidden and encloſed air. In a matter ſo very improbable we may be allowed to add the words of Favorinus himſelf: "Archytas of Tarentum, being both a philoſopher and ſkilled in mechanics, made a wooden pigeon, which had it ever ſettled would not have riſen again till now."

"In the cathedral church of Ravenna I ſaw, in Moſaic work, the pictures of thoſe archbiſhops of the place who, as all their hiſtorians affirm, were choſen for ſeveral ages ſucceſſively by the ſpecial deſignation of the Holy Ghoſt, who, in a full aſſembly of the clergy and people, uſed to deſcend viſibly on the perſon elect in the ſhape of a dove. If the fact of ſuch a deſcent be true, it will eaſily be accounted for by a paſſage in Aulus Gellius (whence the hint was probably taken) who tells us of Archytas the philoſopher and mathematician, that he formed a pigeon of wood ſo artificially, as to make it fly by the power of mechaniſm juſt as he directed it. And we find from Strada, that many tricks of this kind were actually contrived for the diverſion of Charles the Fifth, in his monaſtery, by one Turrianus, who made little birds fly out of the room and back again, by his great ſkill in machinery."

THE WOODEN PIGEON OF ARCHYTAS OF TARENTUM

WE present herewith a facsimile page from "*The Attic Nights of Aulus Gellius*" (130–180 A.D.), a translation in the Collection of the New York Public Library by Beloe, F.S.A. (London, 1795). This records in the old English text the story of the wooden pigeon of Archytas at greater length than it is told elsewhere in English.

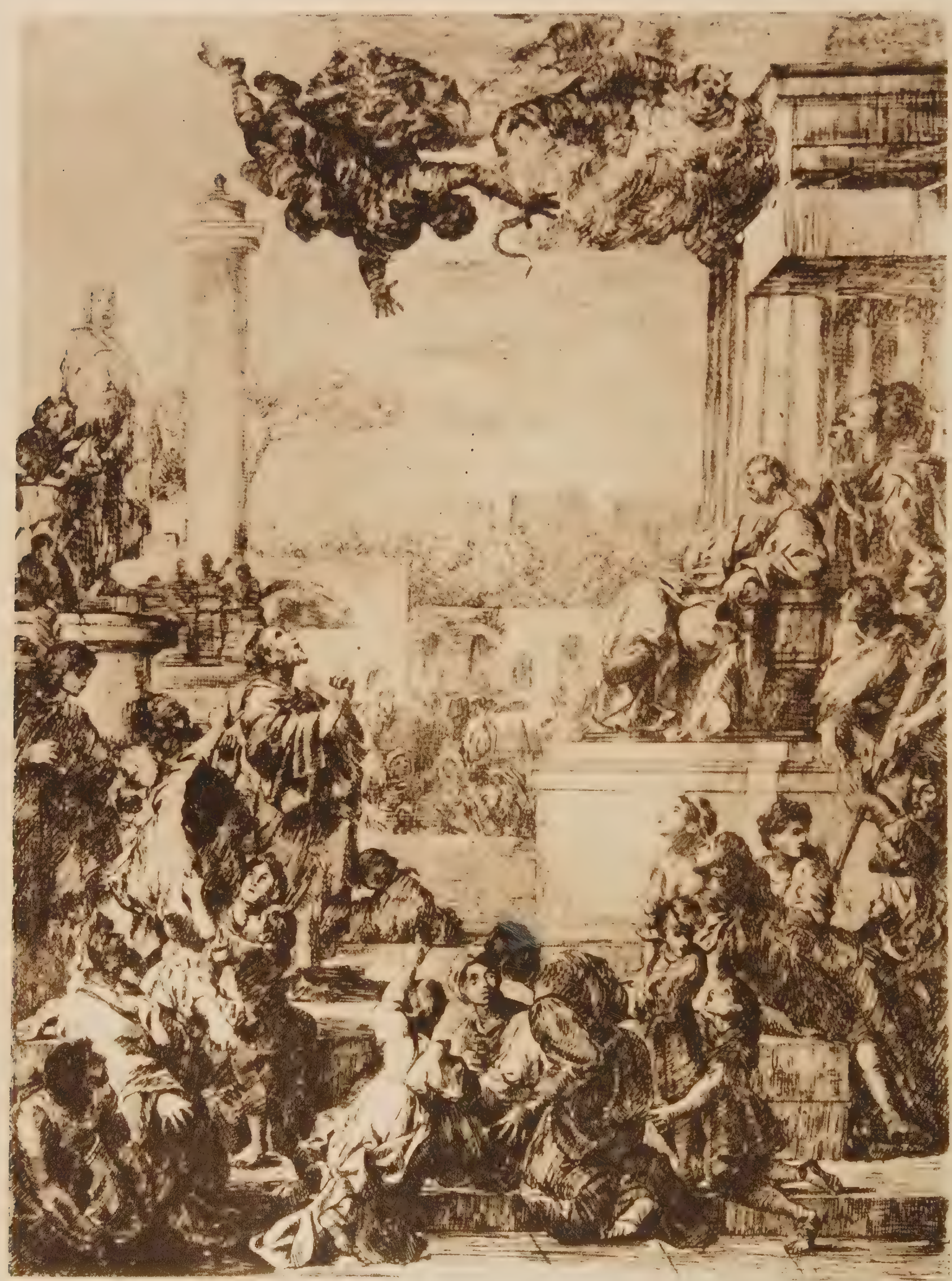
Gellius was a Latin author and grammarian. He studied philosophy in Athens. His "*Attic Nights*" are a literary diary with quotations from others and comments of Gellius himself on a wide variety of subjects. Gellius quotes Favorinus, Greek philosopher at whose feet he sat in Athens, but unfortunately the writings of the latter have not been preserved.

Archytas lived a century before Euclid and Archimedes. He is credited with being almost the first to bring mathematics to human uses. He constructed and flew this wooden pigeon about four hundred years before Christ. His exploit excited more discussion among scientists and philosophers for the next two thousand years than all the attempts of men to fly. A scientist with a very practical turn of mind, he understood the mechanical balancing of weights which made the movement of the wooden pigeon in the air a possibility.

How he did this we do not know any more than we know how Archimedes made a moving sphere. Was there, as Gellius suspected, "some lamp or other fire within it which might produce such a forcible rarefaction" of the air that it became what today we would term a gas? Or did Archytas actually have some power contrivance within the pigeon which pointed, however remotely, toward the internal combustion engine of the present?

The Greek scientist was dealing with "heavier-than-air" unless he used a wood lighter than any available to us now—or did not use wood at all, but possibly goldbeater's skin, as suggested by Scaliger in the 15th Century. If he used a gas, was he the first in the Occidental World to employ the "lighter-than-air" principle?

SIMON *the* MAGICIAN *Flies Before* NERO *in* ROME—57 A. D.



SIMON the Magician (57 A.D.), worker of Black Arts at the Court of Rome, attempted to fly before Emperor Nero. He fell headlong to earth before a great gathering in the Roman Forum, according to an apocryphal account. Rare print from Collection of Harry Guggenheim.

FLYING DEMONS *of* DARK AGES—*Medieval Europe* 1000 A. D.

SARACEN of Constantinople (about 1100 A.D.), according to Cousin in the "*Histoire de Constantinople,*" attempted to fly around the Hippodrome before a great throng which included the Byzantine Emperor Comnenus.

Clad in a long white robe, stiffened with rods, the Saracen mounted the top of a high tower and stood waiting for a favorable wind until the crowd grew impatient.

Comnenus remarked to the Sultan of Turkey that the experiment seemed to him dangerous and vain, when the Saracen leaned into the wind and at first "rose like a bird."

Quickly he crashed, however, breaking many bones and dying from his injuries, "the weight of his body having more power to drag him down than his artificial wings had to sustain."

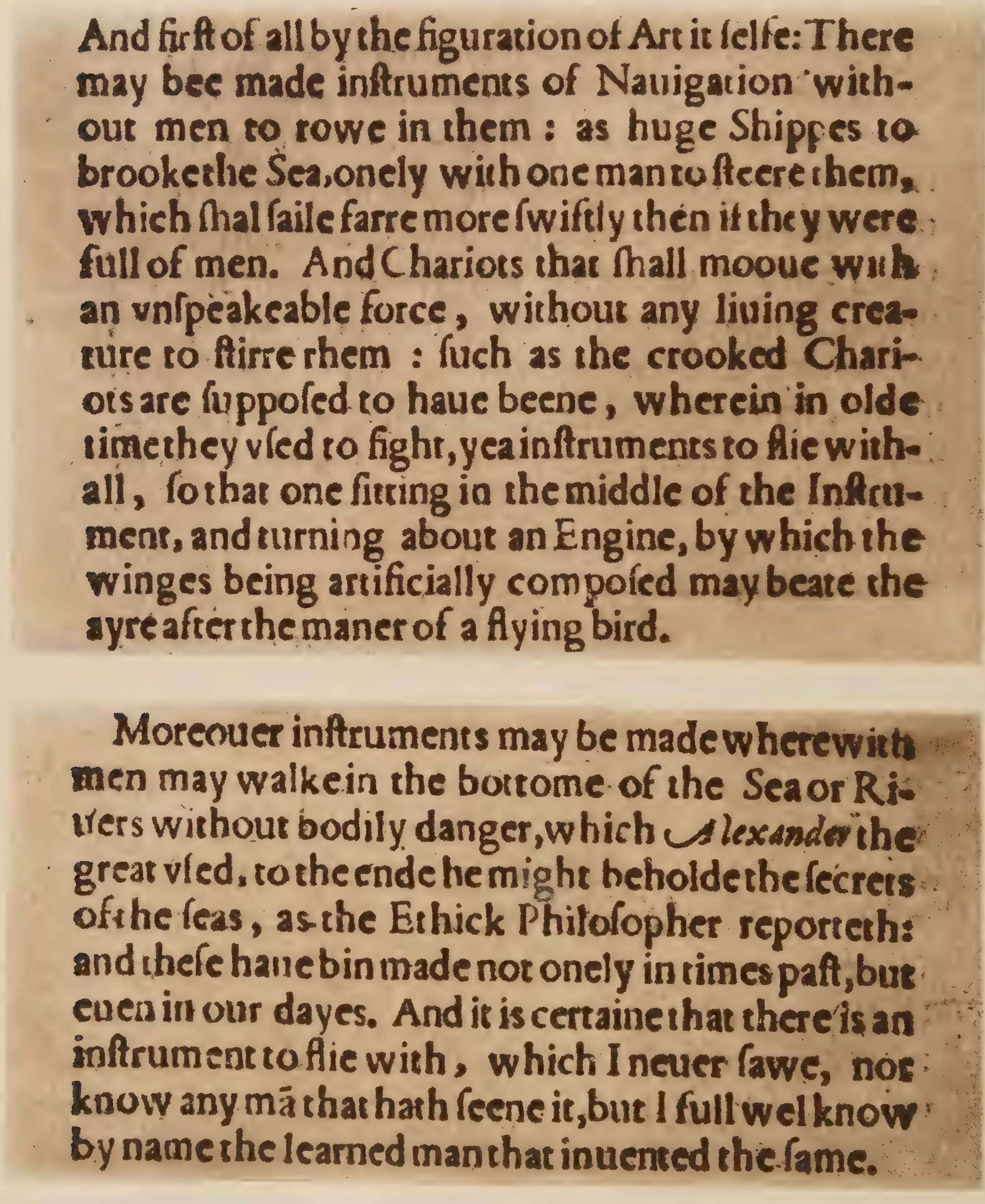
DARK Medieval Centuries (400 to 1400 A.D.) of ignorance and superstition reigned in continental Europe. Ruling powers banned all attempts at scientific development.

The idea of aerial navigation belonged to the Black Arts of sorcery, necromancy, magic—to the Devil himself. Yet the notion of flight persisted. Suppressed in daily conversation, it could not be eradicated from the thoughts of man.

Witches rode the air, ghosts flitted o'nights, Satan took winged human form and his imps frolicked in hours of darkness. It was a world of enchanted castles, winged dragons and fairy rings.

FIRST AIR MAIL IN HISTORY (44 B.C.)—Marcus Junius Brutus, Roman Commander under Caesar, fled with Cassius to Macedonia after the assassination of Caesar (in which each had a part). Seizing the government, he raised forces against Marc Antony. Brutus, beleaguered at Philippi, used pigeons to carry messages to Cassius. (Left.)

FIRST *Printed* RECORD *of* "ENGINE *with* WINGS"—1250 A. D.



And firſt of all by the figuration of Art it ſelfe: There may bee made inſtruments of Nauigation without men to rowe in them: as huge Shippes to brooke the Sea, onely with one man to ſteere them, which ſhal ſaile farre more ſwiftly then it they were full of men. And Chariots that ſhall mooue with an vnſpeakeable force, without any liuing creature to ſtirre rhem: ſuch as the crooked Chariots are ſuppoſed to haue beene, wherein in olde time they vſed to fight, yea inſtruments to flie withall, ſo that one ſitting in the middle of the Inſtrument, and turning about an Engine, by which the winges being artificially compoſed may beate the ayre after the maner of a flying bird.

Moreouer inſtruments may be made wherewith men may walke in the bottome of the Sea or Riuers without bodily danger, which *Alexander* the great vſed, to the ende he might beholde the ſecrets of the ſeas, as the Ethick Philoſopher reporteth: and theſe haue bin made not onely in times paſt, but euen in our dayes. And it is certaine that there is an inſtrument to flie with, which I neuer ſawe, nor know any mā that hath ſeene it, but I full wel know by name the learned man that inuented the ſame.

FACSIMILE from Original "*De mirabile potestate Artis et Naturae*" (Marvelous Secrets of Art and Nature), written in Latin in 1250 by Friar Roger Bacon (1214-1292, "Doctor Mirabilis," English philosopher and man of science. First to write of the mechanics or Science of Human Flight, Friar Bacon here asserts the "existence of a Flying Machine." He also predicts the automobile, the steamship and the submarine. This facsimile in quaint Chaucerian text is from the first book in which Bacon's work was printed in English, "*The Mirror of Alchymy*" (1597).

ROGER BACON *Makes Record of* "INSTRUMENTS *to* FLIE"

Old Print of Roger Bacon

SEVEN hundred years ago, when the First Representative Parliament in England was soon to assemble, Roger Bacon (1214-1292) looked down the centuries and saw human flight as an accomplished fact. Bacon was a friar. His prophecy of a flying machine and predictions of numerous other inventions of modern science, are reproduced on the opposite page.

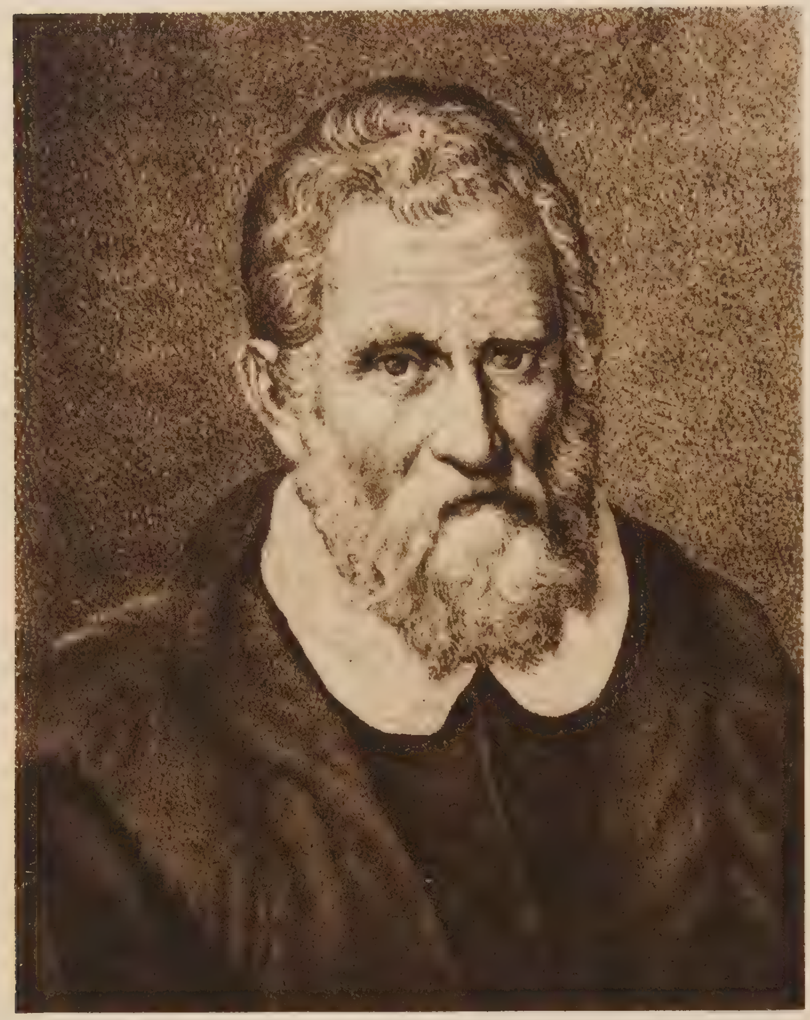
He was one of the earliest students at Oxford University. Taking the degree of Master of Arts, he went to Paris, where he also received an M.A. degree. He wrote and lectured in Latin, mainly on metaphysical subjects, but his interest in physical science awakened very early.

Bacon's scientific ideas were far in advance of his times. He wrote his "*Opus Majus*," the World's First Encyclopedia (1268 A.D.), in response to the request of Pope Clement IV, and two years later the "*Communia Naturalium*," a still more exhaustive compendium of human knowledge.

Bacon was brought before Jerome de Ascoli, Minister-General of the Franciscan order, with other friars, to answer to the charge of circulating heretical doctrines in Paris. And Friar Bacon, whose chief thought had been the glorification of the Church, spent the next fifteen years in prison, to be released when the Minister-General died—and to die himself within a year.

Repeatedly, in his prolific writings, he makes it plain that he fully believes in man's ability to fly; and he has some idea of how this will be accomplished. In the World's First Encyclopedia, the "*Opus Majus*," he says: "It is possible that a device for flying shall be made such that a man sitting in the middle of it and turning a crank shall cause artificial wings to beat the air after the manner of a bird's flight."

MARCO POLO, *Adventurer* —"MAN *Carrying* BIRDS"—1270



MARCO POLO (1254-1324) was a Venetian nobleman who became one of the great adventurers of all time. As a boy, he went with his father and uncle to Central Asia, China and the Far East. He saw strange sights all about the Orient and even in Northern Africa.

What the Chinese had done in the centuries before his time, and were doing with great kites and flying machines, appealed to his imagination. His accounts so far outran the vision of his fellow Italians that they deemed him a "prince of liars."

At the court of the Great Kublai Khan, ruler of Cathay (which included the China of today), young Polo found wonders of which Europe did not yet dream. When grown, he entered Kublai Khan's service and was a favorite at court. He went on extensive missions for Kublai, even to India and north of the Gobi desert. He was Governor of Yangehow province for three years. During war against Southern China he assisted in the construction of powerful artillery engines.

His observations were not wholly fantastic, as time has proved. In recent years, Col. Theodore Roosevelt and his brother Kermit have brought back from Central Asia specimens of Ovis Poli, the Himalayan sheep which Marco Polo saw and which were named for him. Our portrait of Marco Polo was probably made after his death, but is believed to be an accurate likeness.

"MARCVS POLVS VENETVS TOTIVS ORBIS ET INDIE PEREGRATOR PRIMVS."

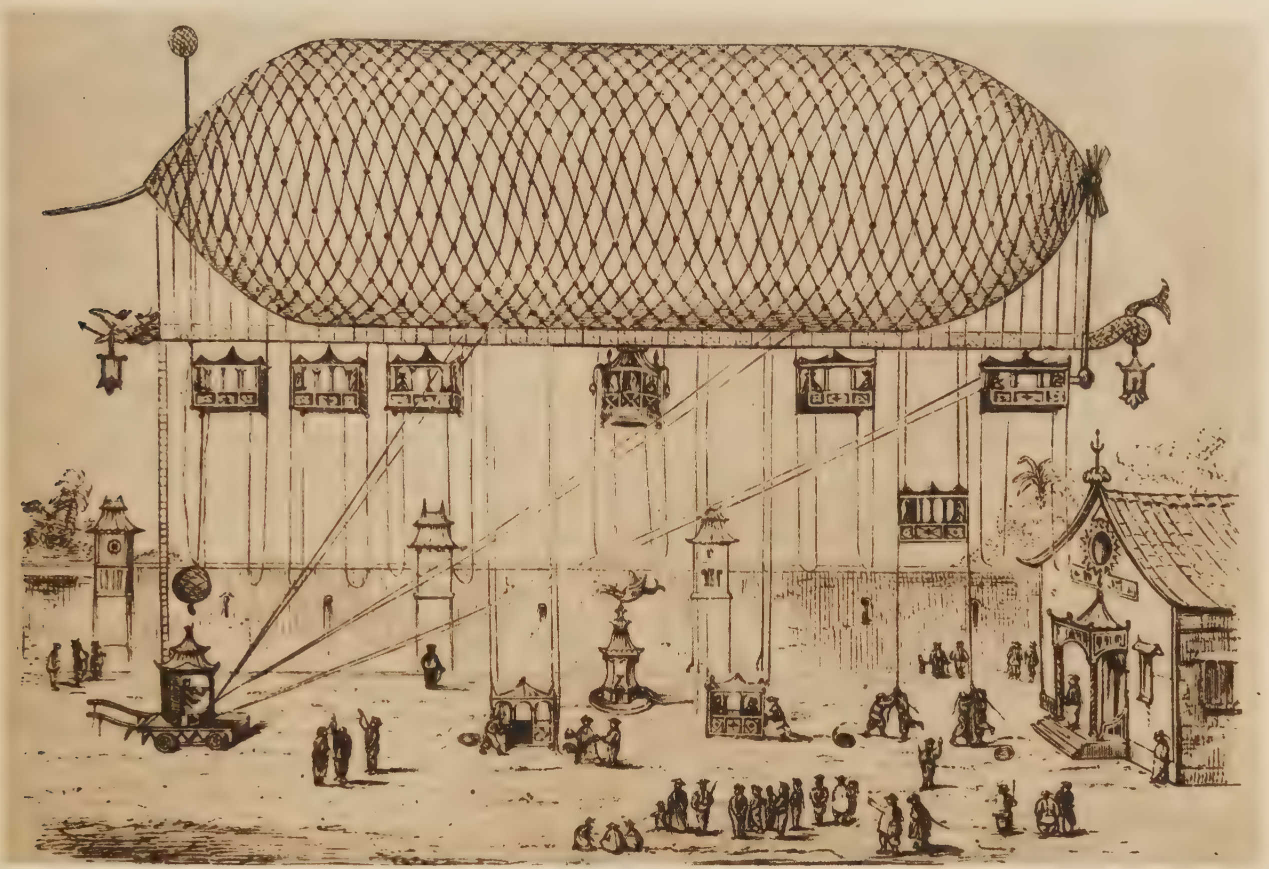
Copied by permission from a Painting bearing the above Inscription in the Gallery of MONSIGNORE BADIA at Rome.

The Great Rukh, or Roc (right), is a "man-carrying bird capable of seizing even an elephant in its talons." It is described by Marco Polo as existing in Madagascar.

"For all the world like an eagle," he claims it to have been, "but one indeed of enormous size; so big that its wings covered an extent of 30 paces and its quills were 12 paces long and thick in proportion. And it is so strong it will seize an elephant in its talons and carry it high in the air."

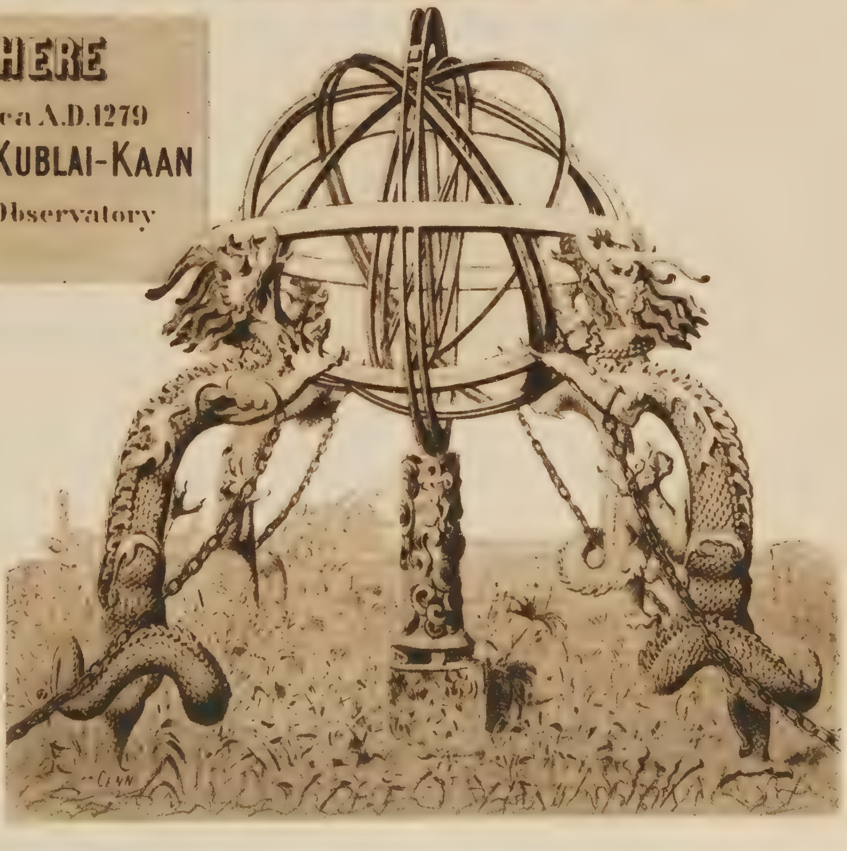
This fabulous Roc appears also in the "*Arabian Nights*" and various other Eastern tales. It has many characteristics of the Arabian *Anka*, the Persian *Simurgh* and the Greek *Phoenix*.

CHINA *Enters* CLAIM *to* FIRST ASCENSION—1306 A. D.



GREAT ARMILLARY SPHERE

believed to have been constructed circa A.D.1279
by **KO-SHAU-KING**, Chief Astronomer to **KUBLAI-KAAN**
and still preserved in the Court of the Observatory
at **PEKING**.

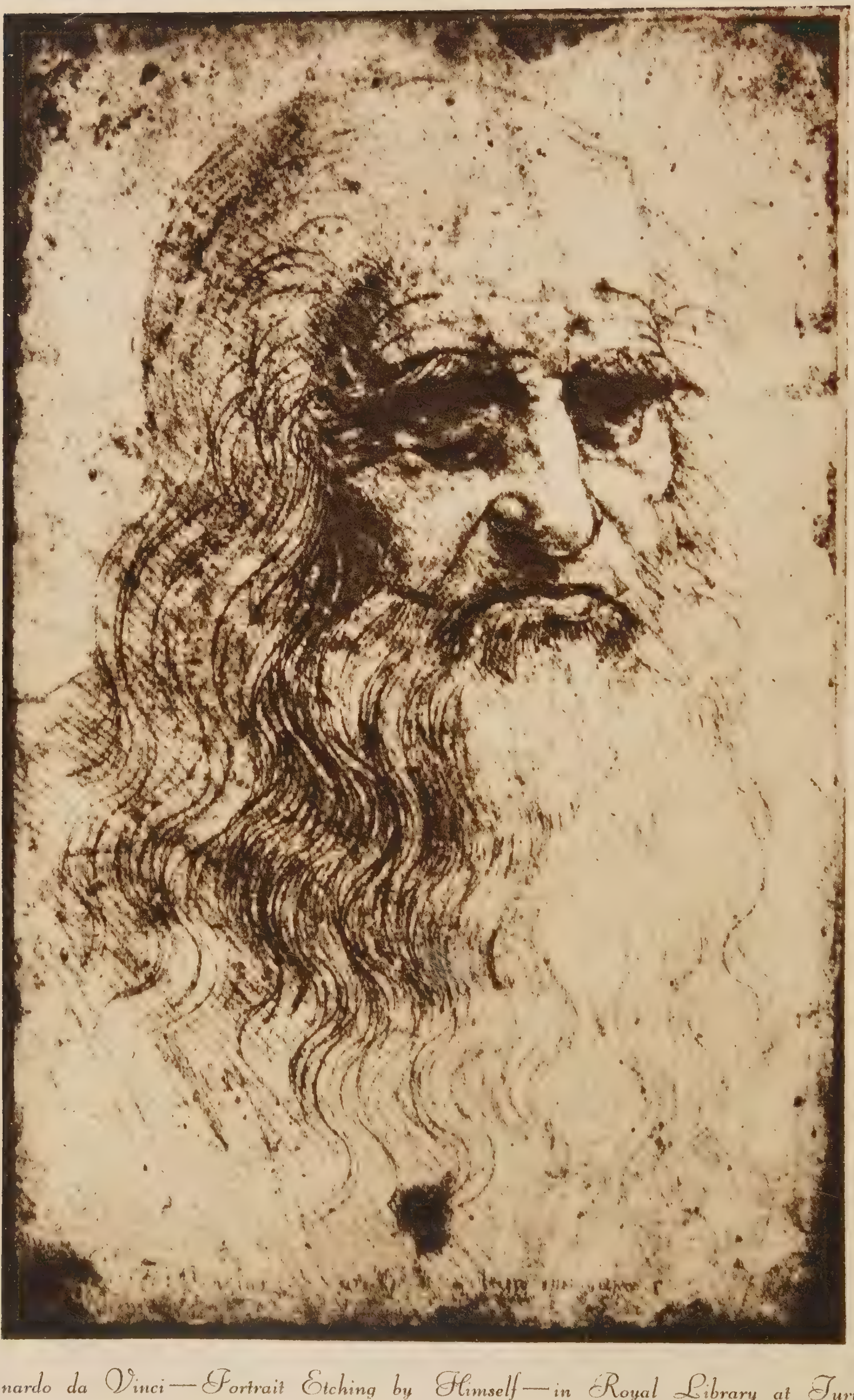


CHINA enters first claim to the invention of the balloon—centuries before Europe knew it.

The Chinese further claim to have had a system of signals by which "different-toned trumpets sounded from the tops of high hills and gave notice of impending changes of wind and weather, for use by navigators of dirigible balloons."

The airship (above) is recorded in official documents as having been used at the coronation of the Emperor Fo-kien (1306). Father Vasson, a French missionary in Canton, tells of having seen this recorded in a letter (dated September 5, 1694) which is quoted in the "*Merveilles du Genie de l'Homme*" of Amedee de Bast soon afterward.

The Great Armillary Sphere (right) was constructed by Kublai Khan's court astronomer (1279). Marco Polo records that he saw it at the Court of Cathay.



Leonardo da Vinci—Portrait Etching by Himself—in Royal Library at Turin

PART V

MAN'S *First* ATTEMPTS *to* CONQUER *the* AIR

From MIDDLE AGES *to* ELIZABETHAN DAYS *and* FOUNDING *of* AMERICA

THIS is the dawn of the scientific era in man's long struggles to find the key which will unlock the mysteries of the air. Here we find Leonardo da Vinci, the Italian master (1490), two years before Columbus solved the problem of a "round world," giving to the world designs and plans for "mechanical flight," including the parachute.

We find, too, Giovanni Battista Danti, a mathematician of Perugia (1490), attempting winged flights over Lake Trasimeno in Umbria; John Damian, Abbot of Tungland (1507), attempting to fly from Stirling Castle; Scaliger (about 1510) suggesting gold beater's skin in the making of "*Volant Automata;*" Jerome Cardan (about 1530) discussing the "*Automaton.*"

Paolo Guidotti (about 1590) is attempting to carry out Da Vinci's theories, ending by falling on a house roof and breaking his thigh bone; Bishop Godwin (1590) is writing his flying romance, "*The Man in the Moone*"—and still more important, Fausto Veranzio is publishing his "*Machinae Novae*" in Venice (1595), and constructing a parachute "with which he drops from high roofs."

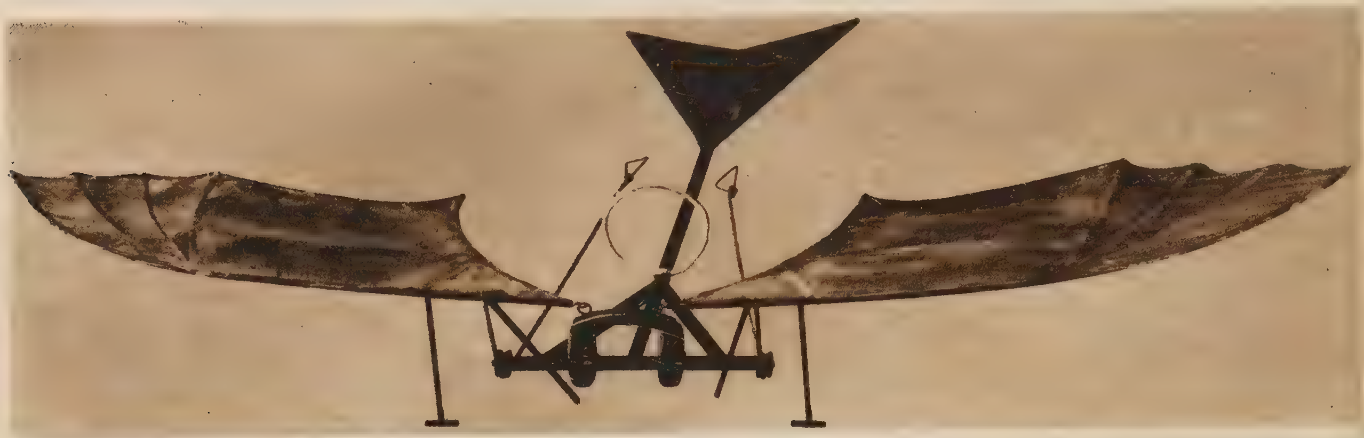
At the time of the First Permanent English Settlements on the American Continent, and the era of the Renaissance in Europe, Francis Bacon, Shakespeare's patron (1627), is making scientific observations in his "*New Atlantis;*" Flayder publishing his "*De Arte Volandi*" (1628) in Tubingen, stating that " men ought to fly with wings as easily as birds;" Mendoza and Schott, Lauro and Kirchner (1640), the last three Jesuit scientists, claiming a "*New Science*" of human aerostatics; Bishop Wilkins' "*Discourse Concerning Flying*" as a scientific problem—with the later predictions of Glanvill "that to future ages it might become as ordinary to buy a pair of wings to fly into remote regions as it then was to buy a pair of shoes."

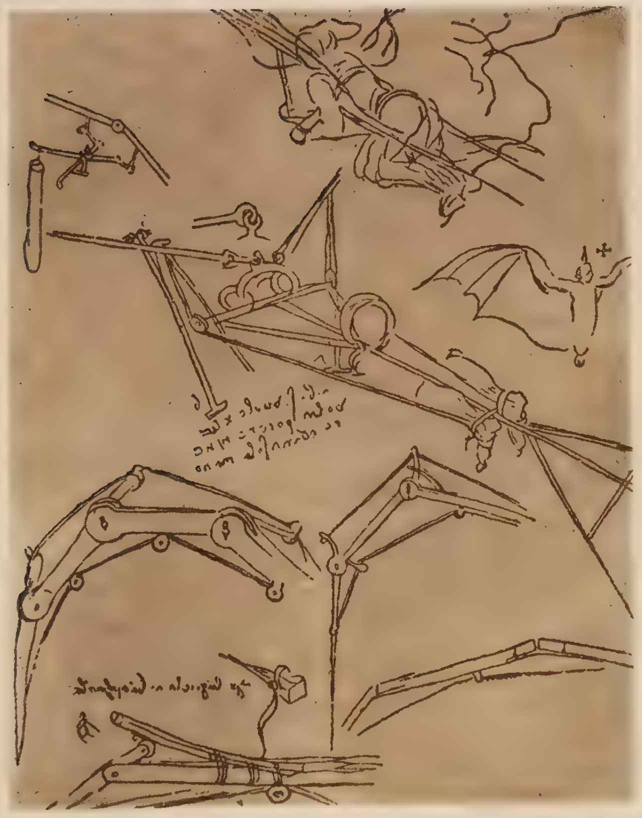
Here we come upon Crispolti, of Perugia (1648), testifying as an eye-witness to seeing Danti "with wings fly from a tower across the great Piazza which was densely crowded;" the Marquis of Worcester with his "*Century of Inventions*" (1663); Robert Hooke with the "first model flying machine which actually flew" (1655); and one Allard, a tight-rope walker who attempts to fly in the presence of King Louis XIV.

Francesco Lana, Italian, comes along with his "Flying Boat" (1670); Besnier with his "Flying Apparatus" (1675); Hooke, Borelli, Lohmeier, Sturm (all around 1676) with their scientific observations; Fontenelle (1686); Sir William Temple ridiculing all these ideas of flight (1692)—as the century closes with the founding of the Bank of England.

Now we meet Gusmao (1709), securing sole patent rights and monopoly for aerostatics from the King of Portugal; Marquis de Bacqueville attempting to fly with wings across the Seine in Paris (1742); Galien with his "*L'Art de Naviger dans les Airs*" (1755); Cavendish and Black experimenting with hydrogen for aerostation (1766); Paucton with his "*Theory of Archimedes*" (1768); Blanchard with his winged "Flying Machine" at Geissen (1781); Cavallo (1771) and Priestley experimenting with inflammable air (1774); Meerwein experimenting with soap bubbles and hydrogen (1781). We are on the eve of "stupendous discoveries."

ITALY *Gives* WORLD *First Design* FLYING MACHINE—1490





LEONARDO DA VINCI (1452-1519), master painter, engineer, scientist and natural philosopher almost without equal—gave to the Occidental World its first plans for a Flying Apparatus and the parachute.

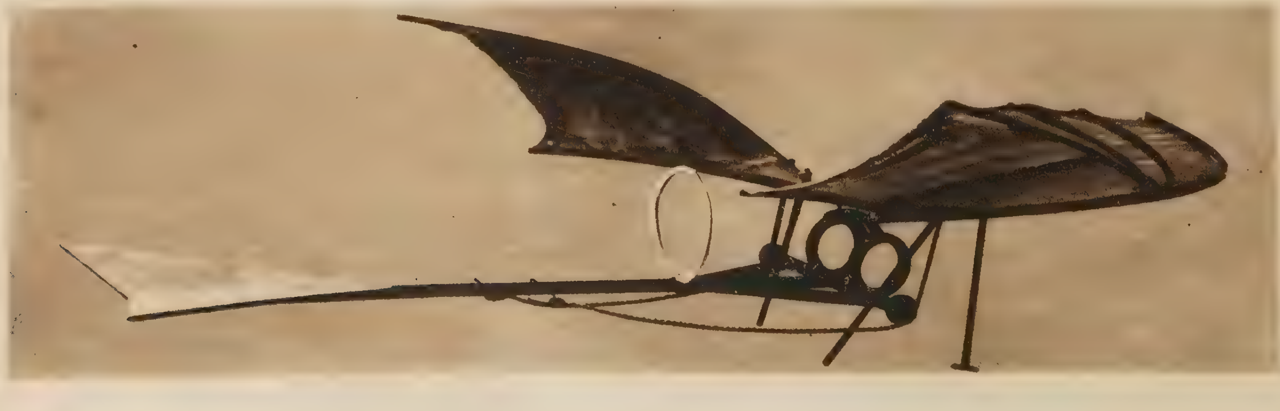
The painter of "Mona Lisa," "The Last Supper" and many other noted works, made Human Flight the preoccupation of his whole life. His last conscious effort was on sketch books of flying machines.

"There shall be wings!" he declared. "If the accomplishment be not for me, 'tis for some other. The spirit cannot lie; and man, who shall know all and shall have wings, shall indeed be as a god."

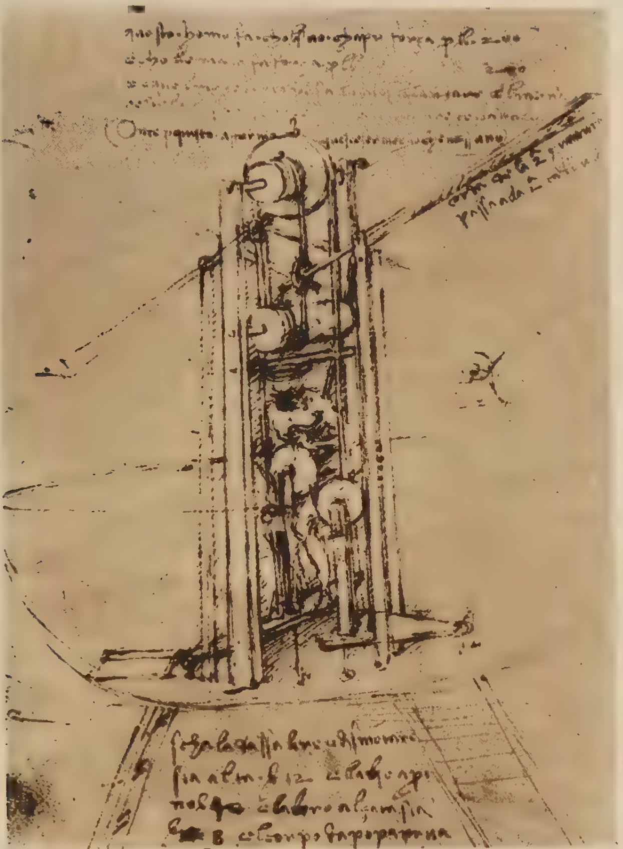
A deep student of nature, Leonardo filled an entire sketch book with the mechanics of bird flight. Repeatedly he had models of flying machines constructed. But they never satisfied him—and he died with his work unfinished.

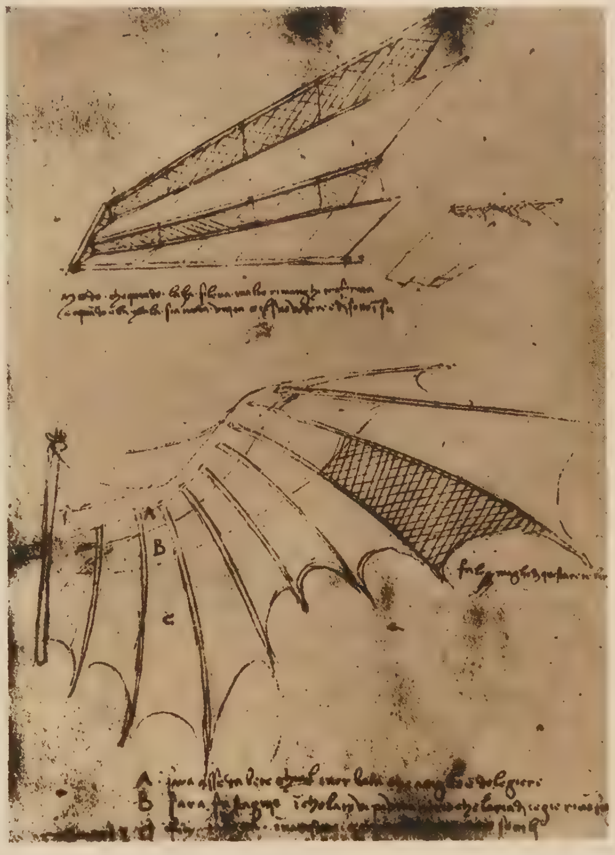
No man ever lived as gifted in both art and science as Leonardo. His designs for flying apparatus, for a helicopter and for the parachute are to be found in the manuscripts of his "*Codex Atlanticus*" (1490), now preserved in the Ambrosian Library at Milan. His sketches and observations on bird flight in "*Codice sul Volo degli Uccelli*" (1505), are now in the Collection of the Count Marszolini in Rome. These able works of da Vinci lay hidden in obscurity for nearly three hundred years.

The facsimile page presented herewith is from his original book of sketches and observations. The FlyingMachine models reproduced here are from official photographs from the Smithsonian Institution at Washington. These models were made exactly in accordance with Leonardo da Vinci's specifications, and are on exhibition in the National Museum.

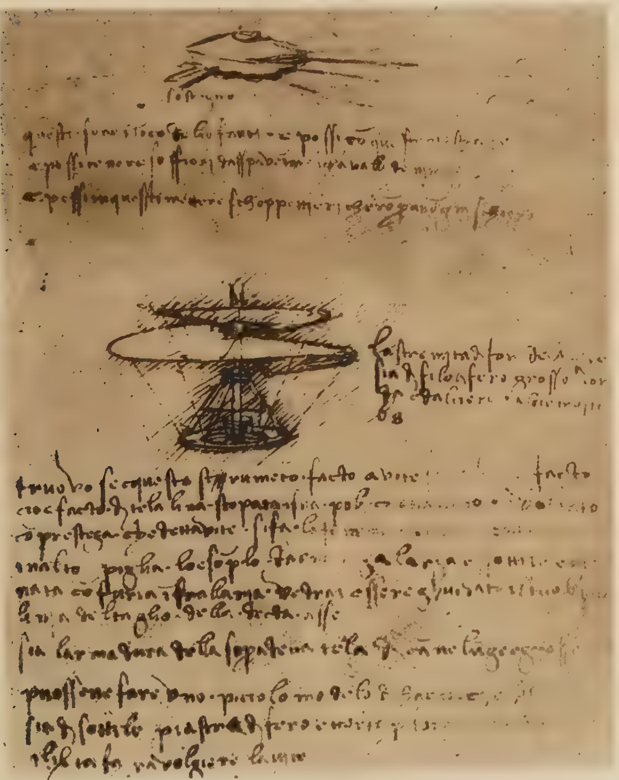


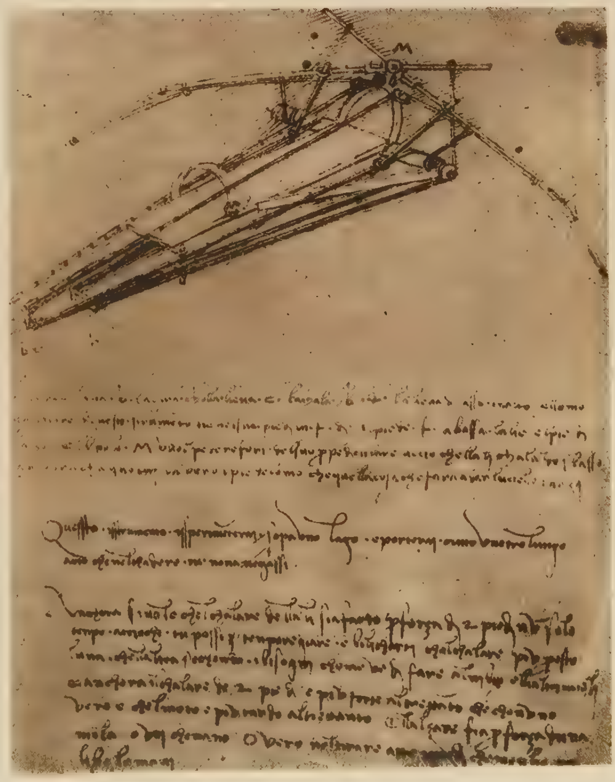
Original DA VINCI *Manuscripts in the* LIBRARY *of* MILAN



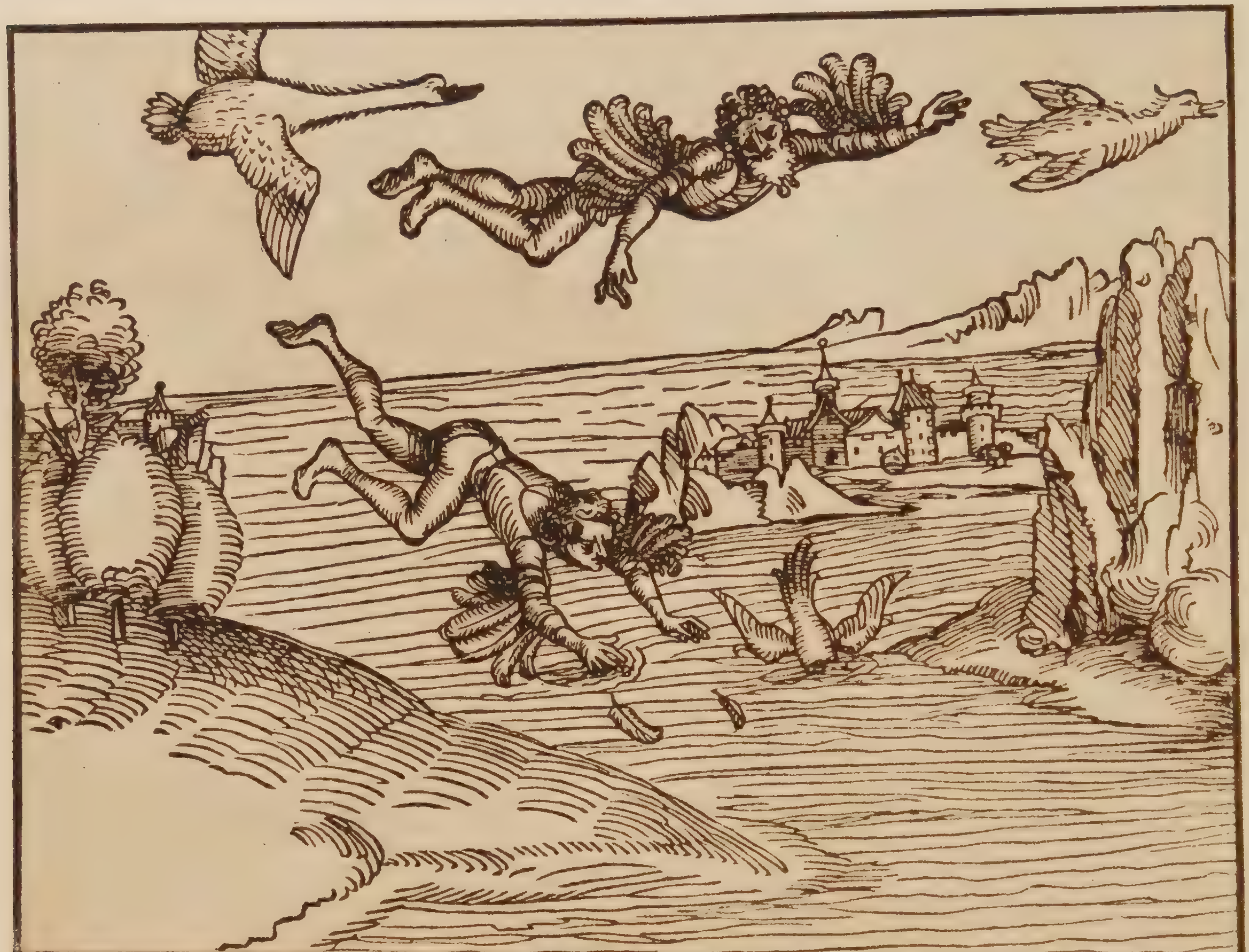


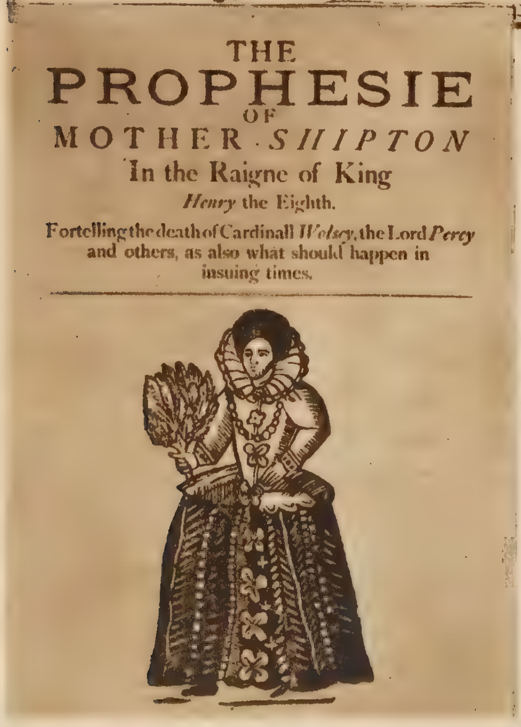
FACSIMILE PAGES FROM "*CODEX ATLANTICUS*" BY LEONARDO DA VINCI.





First PRINTED *Picture of* HUMAN FLIGHT—*Germany*, 1493





THE
PROPHESIE
OF
MOTHER *SHIPTON*
In the Raigne of King
Henry the Eighth.

Fortelling the death of Cardinall *Wolsey*, the Lord *Percy* and others, as also what should happen in insuing times.

THIS is the first picture ever printed of human flight—an ancient wood engraving. It records the flight of Daedalus and Icarus, and is one of the earliest works of the great German engraver, Albrecht Durer (1471-1528). It was made when he was but 21 years old and printed in "*Spiegel der Wahren Rhetorik*," published by Riederer in Freiburg, Germany (December, 1493).

Durer's engraving was the earliest woodcut produced at Freiburg, and the book was the first to be printed there. It contained also the first German translation of any part of Cicero.

Durer came upon the scene of action at the beginning of the greatest revolution in human intelligence that the world has ever known. Printing had but lately been invented in the Occidental World and the consequent diffusion of human knowledge was now to take place.

Mother Shipton (1486-1561) reputed witch and prophetess of early Tudor times, lived near Dropping Well, Knaresborough, Yorkshire, in England. She made a tremendous impression on her own day, and for generations afterward, with a great variety of prophecies of human events. In the lines below she predicts flying.

Ursula Shipton was commonly believed to be the daughter of Agatha Southill and the Devil. The woodcut (left) is from an edition of her prophecies issued by Richard Lownds, London, (1641).

In the air men shall be seen,
In white, in black, and in green.

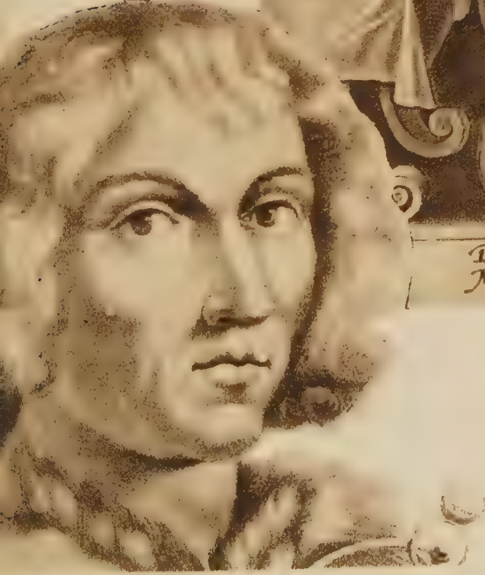
GALILEO, *Scientist*, CHARTS *the* HEAVENS—*Pisa*, 1581

COPERNICUS and Galileo revolutionized the world's knowledge of astronomy. They established knowledge of our solar system and the stars in their courses.

Nicolaus Copernicus, Polish scientist (1473-1543), changed man's outlook on the universe with a new system of astronomy.

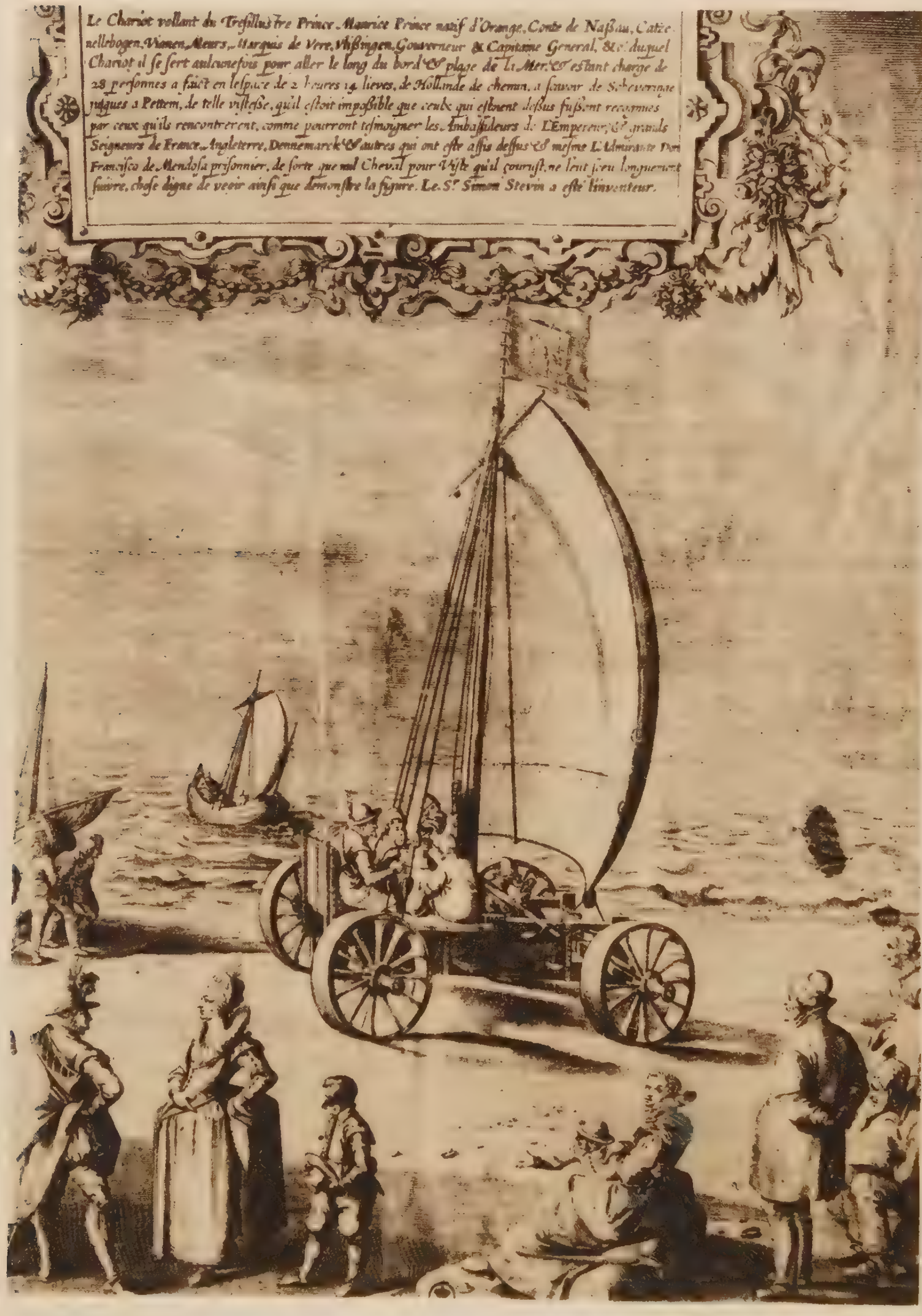
Galileo Galilei (1564-1642), Italian astronomer and experimental philosopher, followed with the discovery of the timing of the pendulum and applied it to the human pulse. He amplified the Copernican theory of the solar system and by telescopic observations vastly increased human knowledge of the visible universe.

MERCVRIVS
DXTRINA
DOCTRINA et varias artes, ætate ſeconda
MERCVRIVS pueris ſtella ſeconda parat



COPERNICUS (left)
Old Print
in Florence
(1825)
GALILEO (right)
Portrait
by Wyatt

Le CHARIOT *Vollant of* PRINCE *of* ORANGE—*Holland,* 1606



Le Chariot vollant du Treſillustre Prince Maurice Prince natif d'Orange, Conte de Naßau, Catze-
nellebogen, Vianen, Meurs, Marquis de Vere, Vlißingen, Gouverneur & Capitaine General, &c. duquel
Chariot il ſe ſert aulcunefois pour aller le long du bord & plage de la Mer. & eſtant charge de
28 perſonnes a faict en leſpace de 2 heures 14 lieves, de Hollande de chemin, a ſauoir de Scheveringe
juſques a Pettem, de telle viſteſſe, qu'il eſtoit impoßible que ceulx qui eſtoient deſſus fuſſent recognues
par ceux qu'ils rencontreret, comme pourront teſmoigner les Ambaſſadeurs de L'Empereur, & grands
Seigneurs de France, Angleterre, Dennemarck & autres qui ont eſte aſſis deſſus & meſme L'Admirante Don
Francisco de Mendoſa priſonnier, de ſorte que nul Cheval pour viſte qu'il couruſt, ne leut ſceu longuement
ſuivre, choſe digne de veoir ainſi que demonſtre la figure. Le. S^r Simon Stevin a eſte linventeur.

At the time when the First Permanent English Settlements were being made on the Western Hemisphere (1607-1620) the Sailing Chariot came into existence on the continent of Europe. It actually was developed into a rapid means of locomotion.

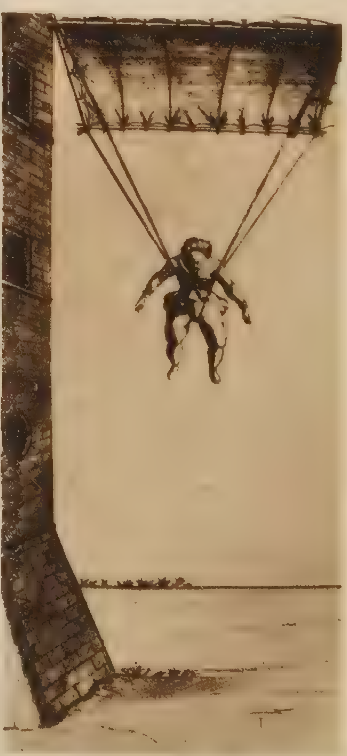
The picture (left) is that of a famous Flying Chariot made by Dr. Simon Stevin of Bruges (1548-1620), inventor and scientist, for Prince Maurice of Orange in 1606. As the inscription on the Old Print relates, the Prince took 27 friends and himself aboard and traveled along the beach from Schweringen to Pettem, 14 miles, in two hours.

This document further records that the journey was made "so rapidly that it was difficult to recognize those who were in the chariot, as testified to by the Ambassador of the Emperor and grand seigneurs of France, England, Denmark and even the Admiral Don Francisco de Mendoza." The rare print is deposited in the Bibliotheque Nationale in Paris.

HERE is the first printed picture of a man descending safely out of the air by the use of a parachute (right). It is found in "*Machinea Novae*" written by Fausto Veranzio, a Venetian, said to have been an architect (1595).

Veranzio studied the parachute plan left by Leonardo da Vinci, a century before, and believed he had improved on it with this rectangular, sail-like affair with a cord to each corner joining in the harness of the user.

This print was accredited to be a picture of a parachute drop by the originator (dated 1607 by some writers and 1617 by others) but Hodgson in "*The History of Aeronautics in Great Britain*" (1924) points out that there is no dependable evidence of this. At all events, the book containing this picture was published in 1595.



"*Strange* VOYAGE *to* WORLD *in the* MOON"—*Gonzales*, 1638

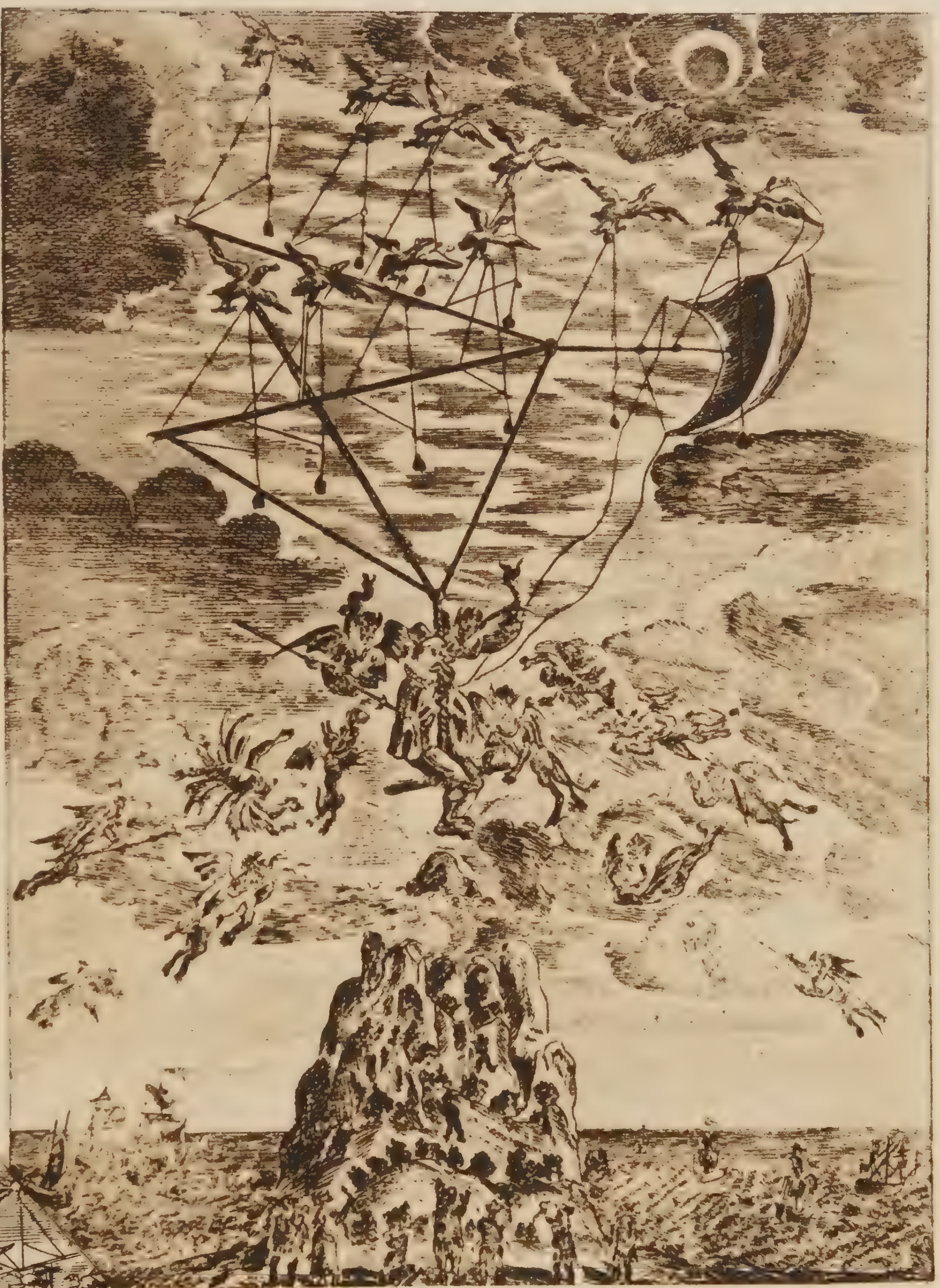
FLYING and "Aerial Travel" became established as the popular romance. Francis Godwin (1562-1633), Bishop of Hereford, was but one of many writers of the early centuries who wove fantastic romances around the mysterious problem.

Bishop Godwin's book (written between 1599 and 1603) was first published (1638) after his death, under title "*The Man in the Moone, or a Discourse of a Voyage thither by Domingo Gonzales the Speedy Messenger.*"

Gonzales, a Spanish sailor, was supposed to have been abandoned because of illness on the then uninhabited Island of St. Helena. Recovering his health, he occupied himself with training wild swans to come at his call and carry light burdens.

These swans finally flew away with him to Spain, harnessed to a mechanism which he invented.

This Old Print (right) is from an early English edition of Godwin's fantasy. Below is the frontispiece of a French edition published in Paris (1671).

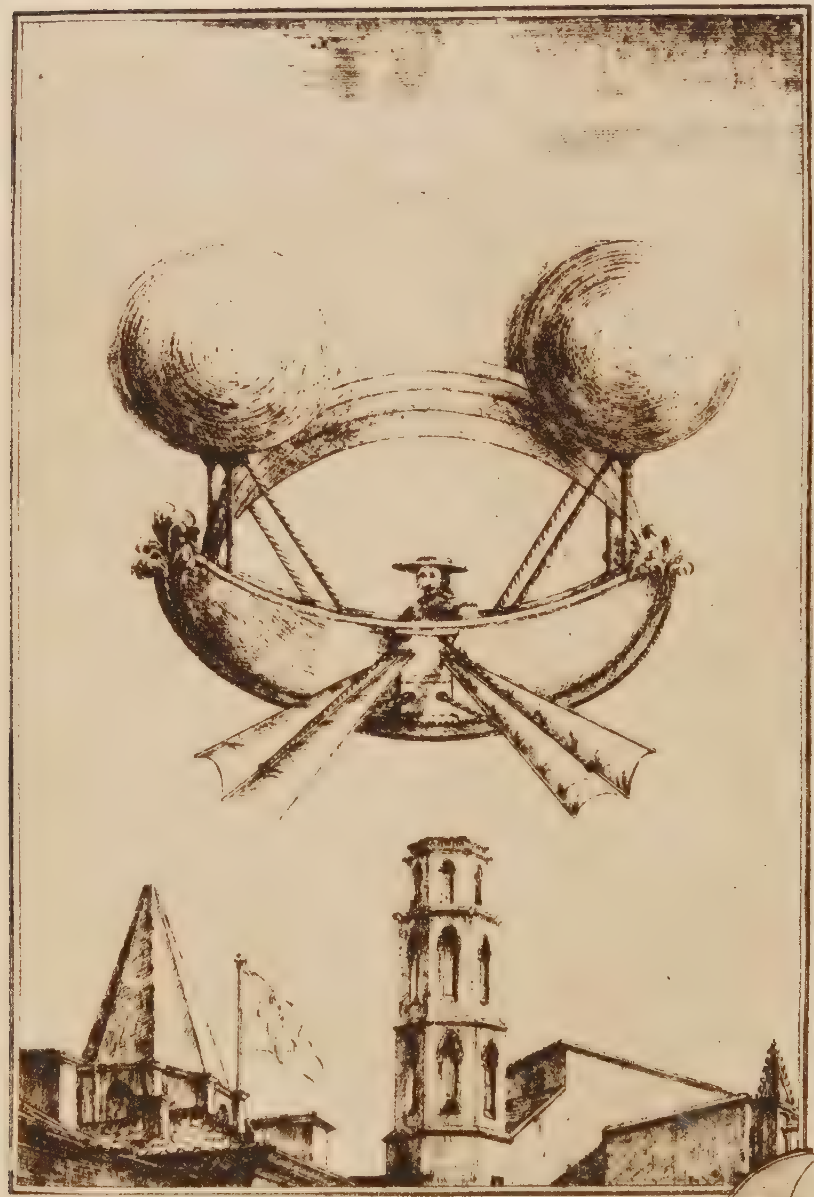


The fictitious Domingo Gonzales (1638) records: "I fastened about every one of my Ganzas a little pulley of Corke, and putting a string through it of meetly length, I fastened the one end thereof unto a block almost of eight pound weight, unto the other end of the string I tied a poyse, weighing some two Pound."

About twenty-five birds harnessed to the contrivance were able to carry Gonzales himself aloft. "I hold it farre more honour," he says, "to have been the First Flying Man, than to bee another Neptune that first adventured to sayle upon the Sea."

On the return to Spain, Gonzales is saved from shipwreck by his ganzas, which fly away with him to the moon—their real habitat.

LANA'S FLYING BOAT *and Aerial* WARFARE—1670



FRANCISCO LANA (1631-1687) was a Jesuit priest, born of a noble family. For a time he was professor of mathematics at Ferrara—but always was more scientist than priest. His "*Prodromo overo Saggio di alcune Inventioni Nuove,*" published in Brescia (1670) was a comprehensive discussion of aerial navigation and contained the first proposal of a vacuum balloon.

Lana proposed four copper globes, 25 feet in diameter, from which the air had been exhausted, leaving a vacuum, supporting a light car, guided by a triangular sail.

He believed that, with the weight of air removed, this would rise. Atmospheric pressure was discovered in 1643, but the exact pressure and specific gravity of air was not known till 1672 or he would have seen his error. He made no practical experiments because of lack of money.

M. Marey Monge, a Frenchman, (1843), built a machine on Lana's specifications which did not work and ended on the scrap heap. Above is a conception of Lana's device from "*Astra Castra.*"

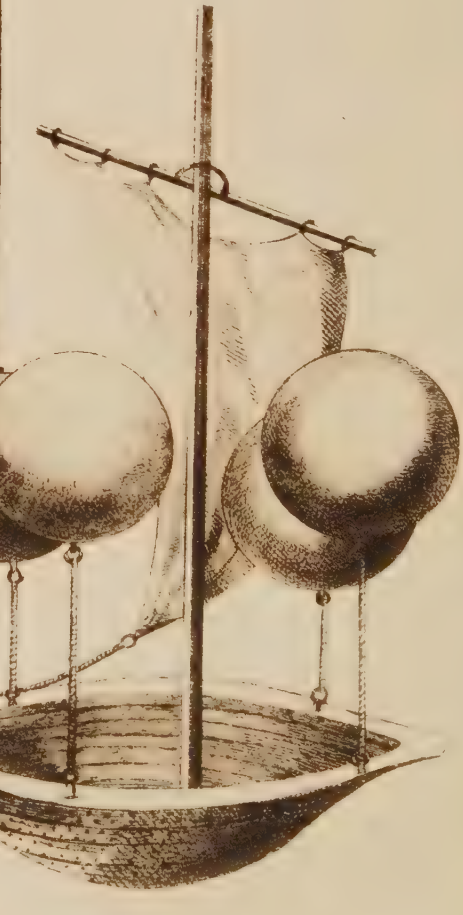
Lana feared the ultimate possibilities of Airships. "God will not suffer such an invention to take effect," he declared, "by reason of the disturbance it would cause to the Civil Government of men."

"No City can be secure against such an attack," he warned. "Ships may at any time be placed directly over it, and descending, may discharge Souldiers. The same would happen to private Houses and Ships of the Sea."

"It may over-set them, kill their men, burn their ships by artificial fire-works and fire-balls. Thus they may do not only to Ships but to great Buildings, Castles, Cities, with such security that they which cast these things down from a height out of Gun-shot, cannot on the other side be offended by those from below."

Hooke (1679), in his examination of the principles set forth by Lana and Besnier, was not disturbed by "so Diabolical an Engine." He did not believe they would ever be capable of "doing any great harm . . . to the Civil and Peaceful Government of the World."

ANCIENT LANA PRINTS



Bishop WILKINS *and His* "MATHEMATICAL MAGICK", 1648

John Wilkins, of England, (1614-1672) was Bishop of Chester. An able mathematician, and one of the founders of the Royal Society of Great Britain, he wrote extensively on human flight.

His "*Discovery of a New World*" (1638) tended to prove the possibility of a habitable world in the moon. Two years later he presented a discourse on "the way of getting to it." In his "*Mathematical Magick*" (1648), Bishop Wilkins comments on the report that in South America great condors (right) had been trained to carry men.

PORTRAIT OF BISHOP WILKINS

BISHOP Wilkins' "*Mathematical Magick*" (1648) was by far his most important scientific work. It is divided into two parts—"*Archimedes, or Mechanicall Powers*" and "*Daedalus, or Mechanicall Motions.*"

The good bishop cites the wooden dove of Archytas of Tarentum (See Page 93) and also "Regiomontanus",—John Muller (1436-1476), who is said to have made a wooden eagle and an iron fly which flew at Nuremberg.

Wilkins quotes Scaliger (1484-1558) and Cardan (1501-1576), both of whom discussed flight at length, and other more ancient writers. He mentions four ways in which flight may be attained: "By spirits or Angels; by the help of fowls; by wings fastened immediately to the body; by a flying chariot."

PORTRAIT OF SIR ISAAC NEWTON (Below)

Sir Isaac Newton (1642-1727), noted English natural philosopher, born the year Galileo died, discovered the Law of Gravitation, which all heavier-than-air planes must overcome to remain aloft. His work in physical science and mathematics was of tremendous importance to posterity. His portrait (below) is reproduced from a painting by Vanderbank in possession of the Royal Society.

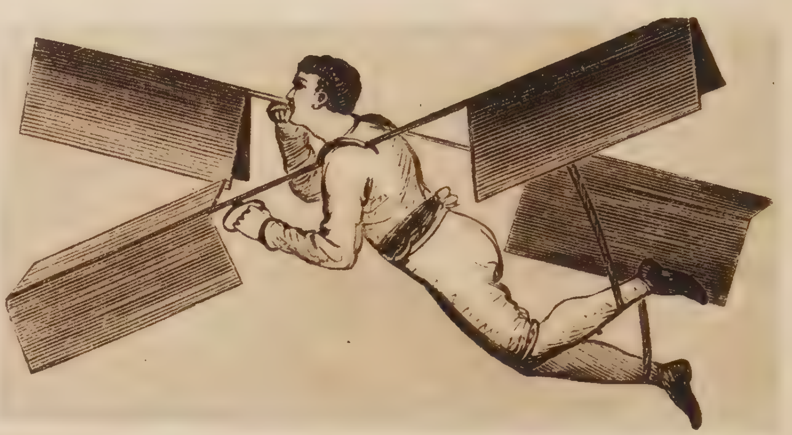
BESNIER *Attempts to* FLY *with* WINGS—*France*, 1678

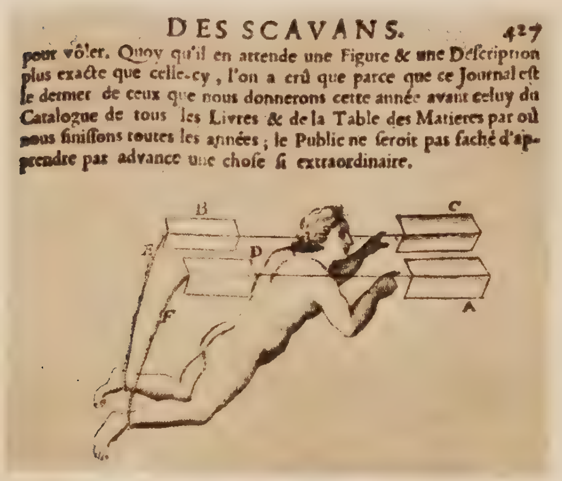
BESNIER (1675) a French locksmith of Sable, gained a place in aeronautical annals by constructing a crude flying or gliding machine of small planes operated by arm and leg power.

He is claimed to have launched himself in this device from the roof of his house and to have flown over a barn (some accounts make it over a river) and landed on another roof.

He sold the apparatus to a traveling showman, who was killed in trying to use it.

BESNIER DESIGNS (Right and Below)



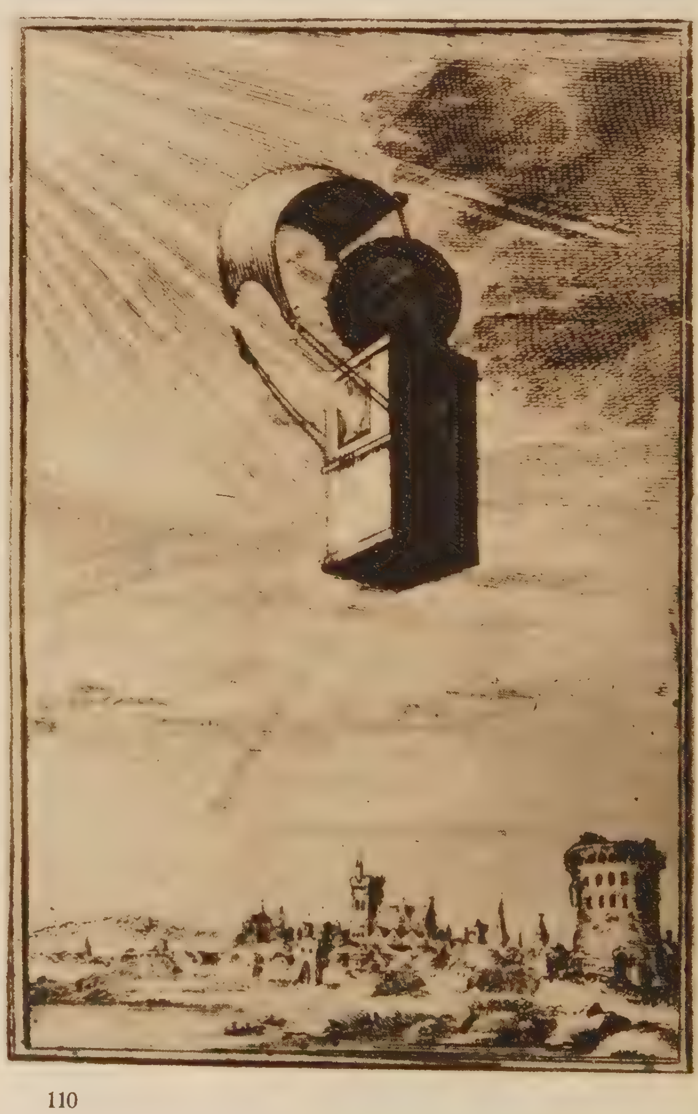


DES SCAVANS. 427

pour vôler. Quoy qu'il en attende une Figure & une Deſcription plus exacte que celle-cy, l'on a crû que parce que ce Journal eſt le dernier de ceux que nous donnerons cette année avant celuy du Catalogue de tous les Livres & de la Table des Matieres par où nous finiſſons toutes les années; le Public ne ſeroit pas faché d'apprendre par advance une choſe ſi extraordinaire.

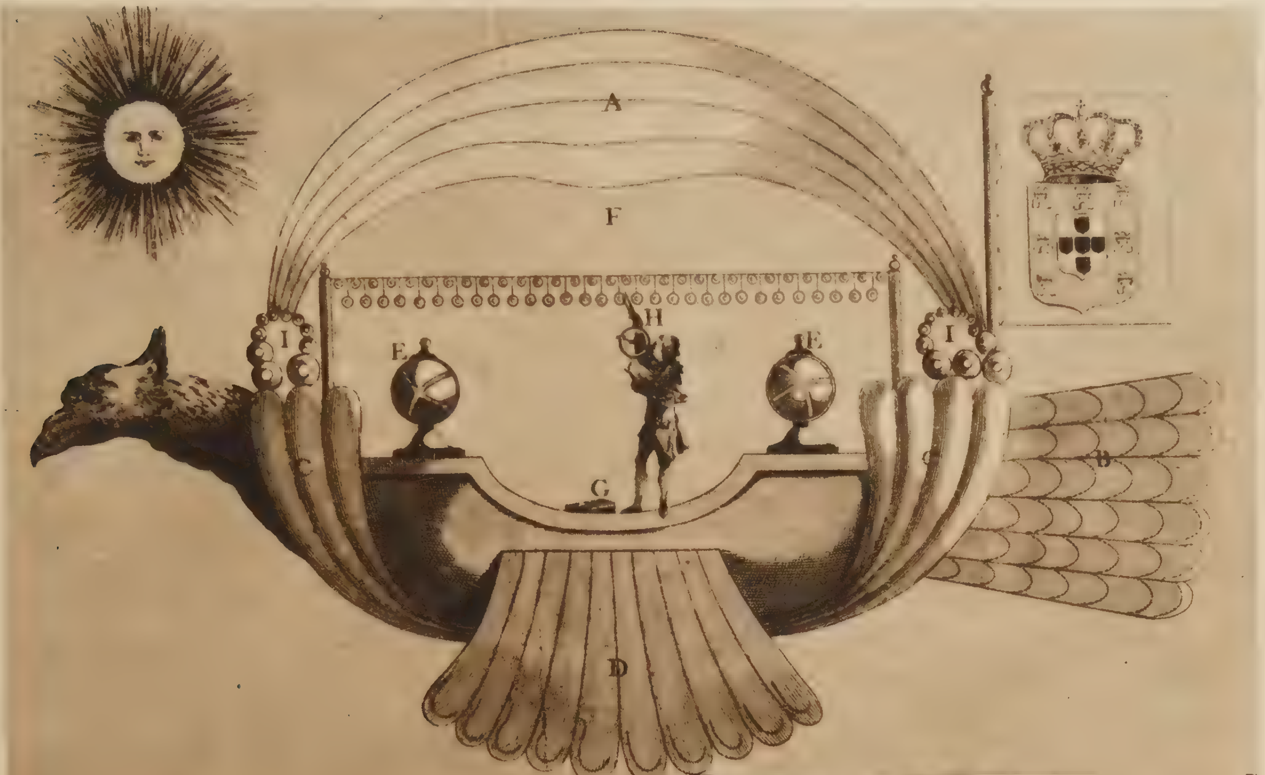
Cyrano de Bergerac (1620-1655), French romanticist, presented aerial navigation in his imaginative tales (1656-1662)—"*Histoire Comique des Estat et Empire de la Lune*" and "*de Soleil*".

He told of fantastic flights to both moon and sun, by means of dew-filled flasks, rockets, and in flying machines. The old engraving (below) of the Voyage to the Sun is from an edition of Cyrano's work (1681).



OLD CYRANO DE BERGERAC PRINTS
(Right and Below)

Flying BIRD *of* GUSMAO, *Chaplain to King*—PORTUGAL, 1709



BARTOLEMEO Lourenco de Gusmao (1685-1724), a Brazilian priest, was royal Chaplain at the Court of Portugal in Lisbon. He invented the "*Passarola,*" a Flying Machine (1709).

Gusmao's "Aerial Machine" was regal in conception and sumptuous in execution, in so far as elegant draughtsmanship could make it appear. It was to be drawn upward and its buoyancy maintained in air by powerful magnets enclosed in globes. Among other devices it contained a huge bellows to furnish artificially a gale of wind when the conditions were not favorable.

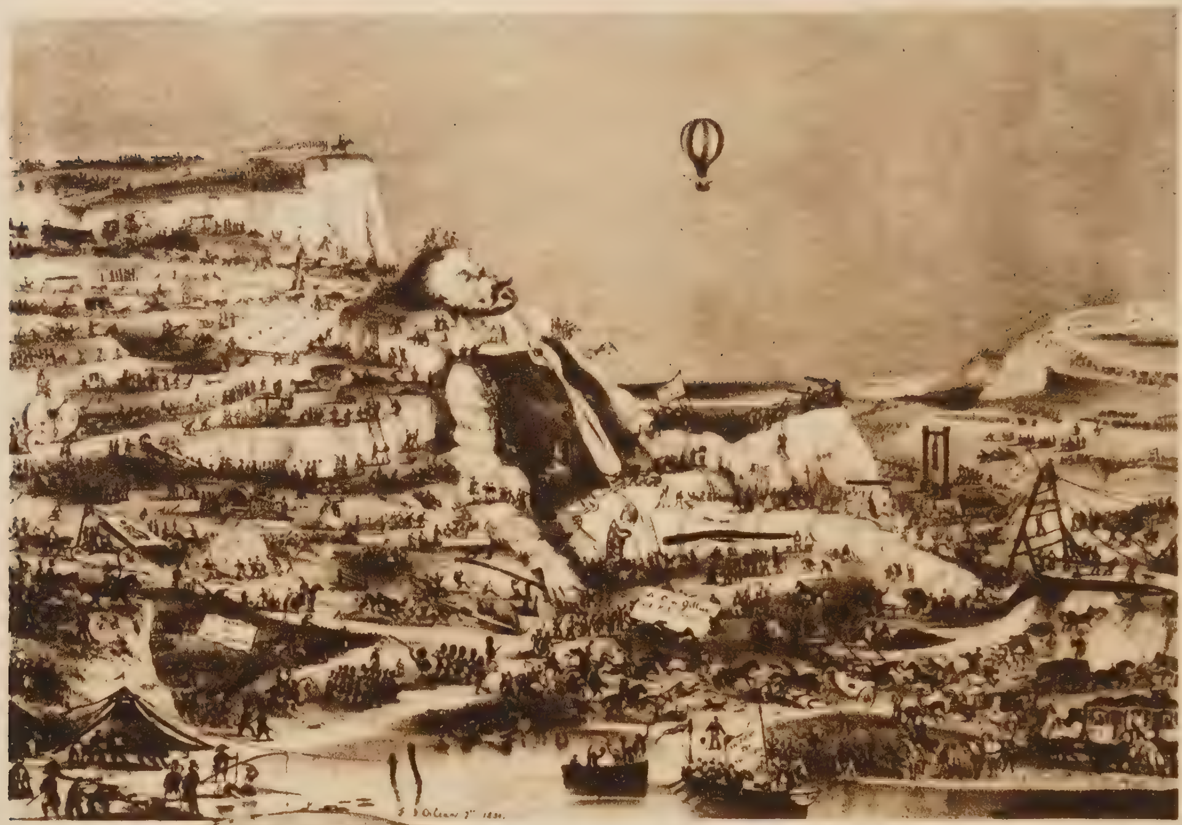
Gusmao was granted patent rights. It is not recorded that he completed construction. King John V, of Portugal (1706-1750), gave him exclusive rights to such devices and threatened with death anyone else who experimented with them.

The King issued a public order (March 17, 1709) which proclaimed; "In order to encourage the suppliant to apply himself with zeal toward the improvement of the New Machine, which is capable of producing the effects mentioned by him, I grant unto him the first vacant place in my College of Barcelos or Santarem, and the first professorship of mathematics in my University of Coimbra, with the annual pension of 600,000 reis during his life."

The design (above) is the work of a contemporary draughtsman and is now in the Collection of the Bibliotheque Nationale in Paris.

The plate (right) is an Italian cartoon of Gusmao.

GULLIVER *in the* LAND *of the* LILIPUTIANS—1735



ANCIENT PRINTS OF LEMUEL GULLIVER

THE World moves on! We find England in the throes of financial panic. The South Sea Bubble has burst (1720). The Englishman needs diversion. And so Dean Swift appears with his "*Gulliver's Travels*" (1726).

Purporting to be the "*Travels into Several Remote Nations of the World by Lemuel Gulliver*"—written by Jonathan Swift (1667–1745), they are the sharpest satirical exposure of the fads and follies, foibles, social and political errors and stupidity of his own and other nations.

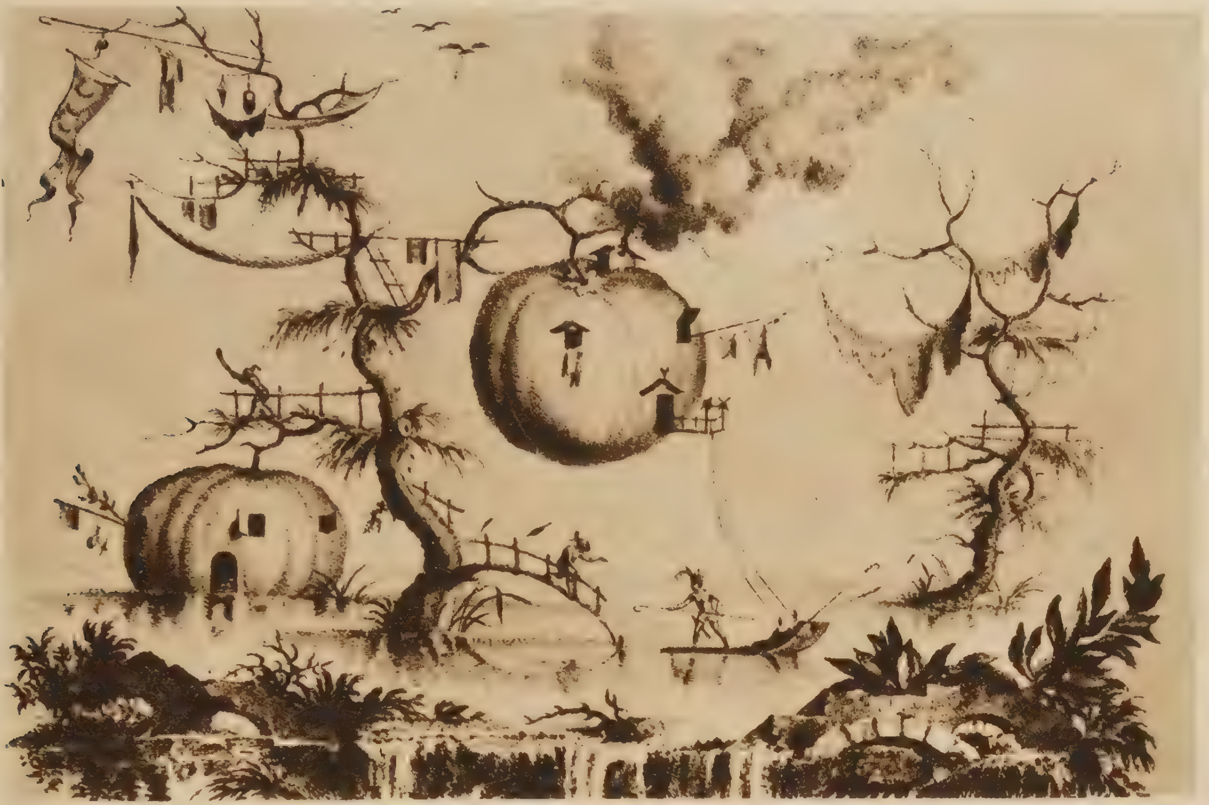
Lemuel Gulliver, first a surgeon and then a captain of several ships, narrated his adventures in *Liliputia*, where the inhabitants were infinitely tiny in relation to a human being. Then he went to *Brobdingnagia*, where this situation was exactly reversed.

The good captain was wrecked on a strange shore. Awakened from sleep, he found himself a captive, bound with what to the *Liliputians* were heavy cables, as the result of extensive engineering operations while he slept.

He was well treated by his captors, who showed him many evidences of social progress and advances in science—far ahead of anything to be found in England. Balloons and flying machines they possessed and used, though among Europeans the balloon was still 57 years in the future.

The portrait of *Lemuel Gulliver* on this page is the frontispiece of a Dublin edition (1735). The engraving (above) is by d'Orleans in the Collection of Bella C. Landauer, New York.

He TRAVELS *in* FLYING CAGE *on Talons of* EAGLE—1735



FLYING Romances were the vogue in the days when Maria Theresa of Austria was the ruling power over the Holy Roman Empire. The Italian imagination was inflamed by one Filippo Morghen whose "*Raccolta delle Cose piu notabili vedute dal Cavaliere Wild Scull e dal Signor de la Hire,*" published in Naples, related how the Cavalier Scull and Signor de la Hire journeyed to the moon in a Flying Machine and found many wonders at which to marvel.

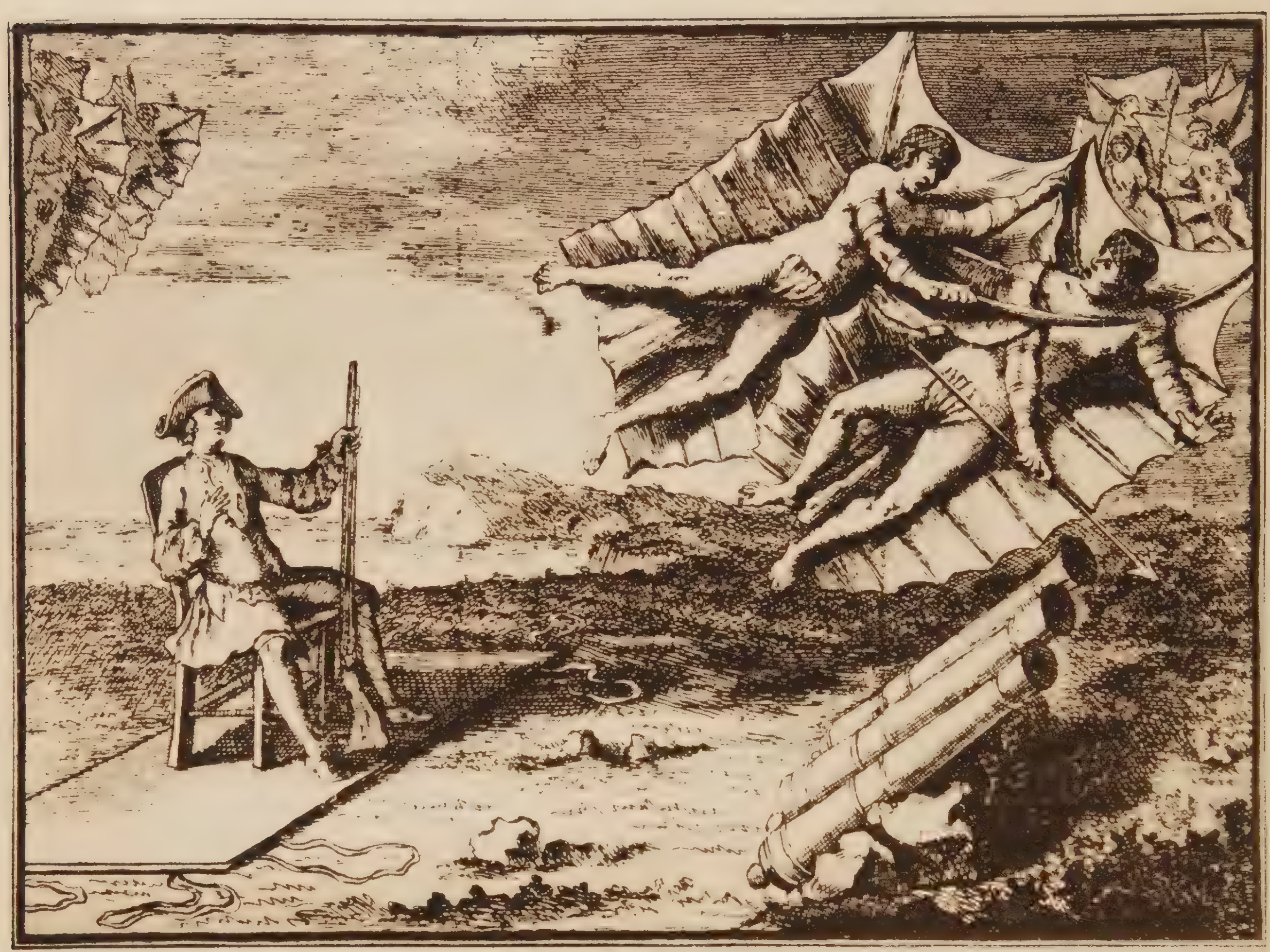
Morghen (born 1730) was an artist and engraver, as well as skillful romancer. His book is illustrated with notable engravings. The print (above) is from the rare first edition. It shows huge water melons as dwellings on the moon, either hung on trees or floating in the water, to protect their occupants from wild beasts.

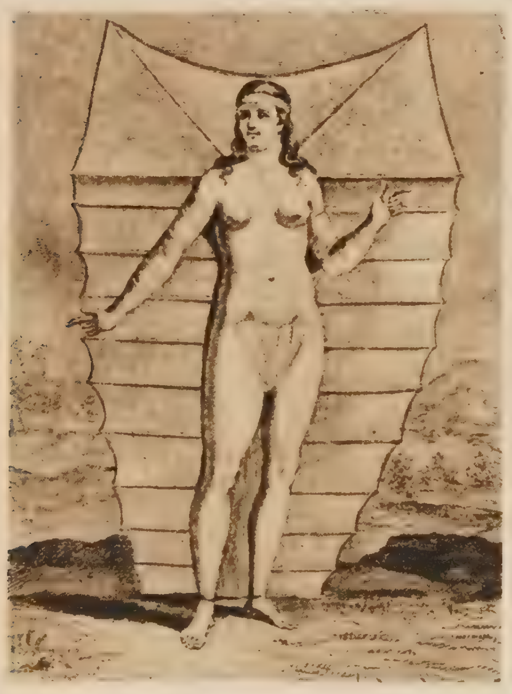
The Morghen engravings also show the coaches which are used in the Moon and are propelled by sails, a cross between an airplane and an automobile; Navigation by means of a huge bellows and steam power on the Moon; the Moon method of transporting freight on rafts drawn by steam bellows resembling a steam tug.

The frontispiece of Morghen's book is an engraving by him of the flying apparatus used by his voyagers, a balloon to which is attached a car or gondola fitted with wings and tail.

Gulliver's escape from *Brobdingnagia,* where he was confined in a huge chest, is shown on this page (right). An immense eagle took this chest in its beak and carried *Gulliver* far away, to drop him in the sea to be picked up by a passing ship.

FLYING WOMAN *of* "*Subterranean World at* SOUTH POLE"





ROBERT PALTOCK (1697–1767) appears with "*The Life and Adventures of Peter Wilkins*" (1751), a Cornish sailorman supposed to have been wrecked in the ship "Hector" near the South Pole and to have made his way through a subterranean cavern into a New World in the interior of earth. It is inhabited by Glums and Gawrys, flying men and women endowed with "graundees," or wings.

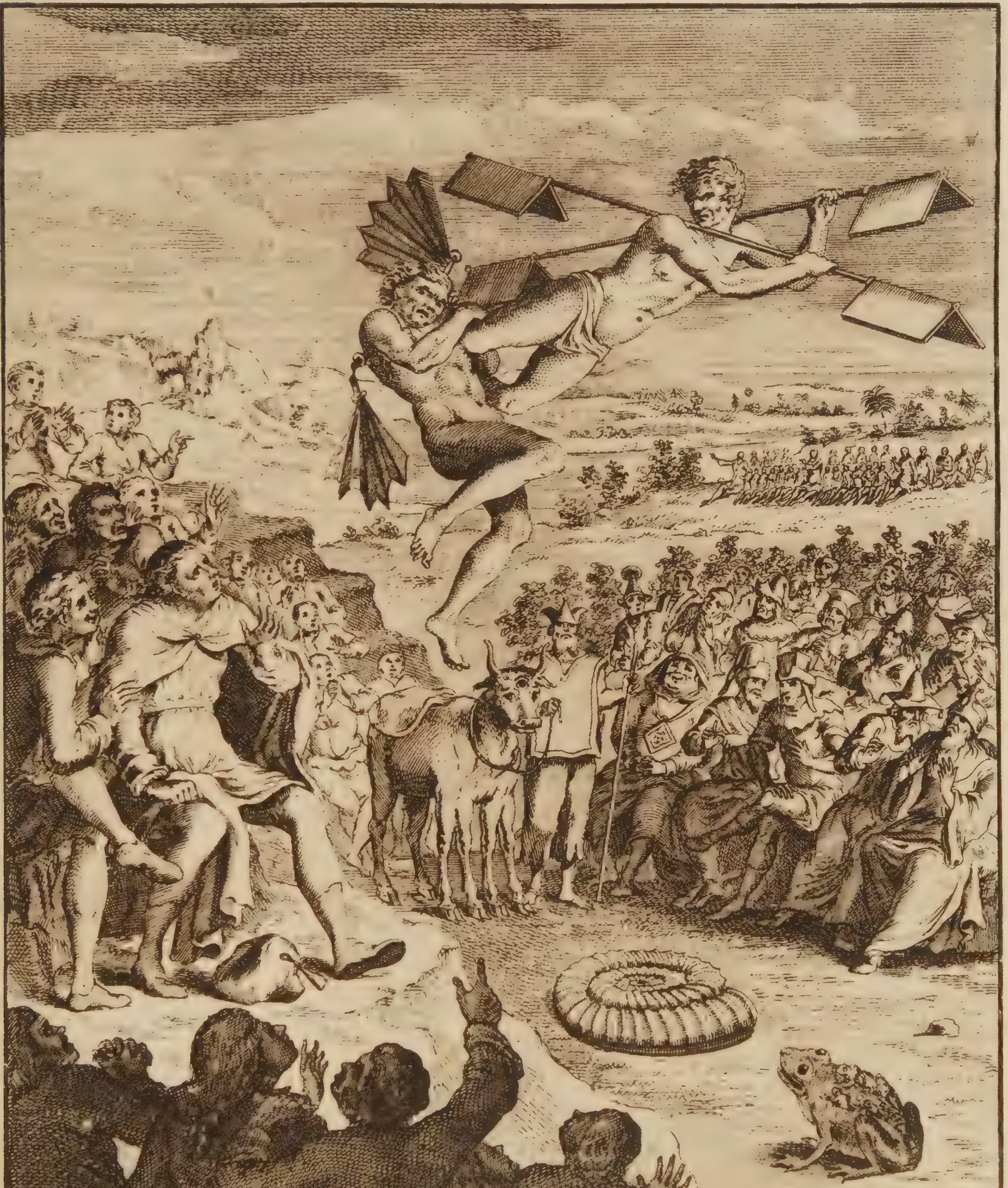
Wilkins saved the life of a Gawry whom he met and afterwards married, the fascinating "Youwarky." These winged people were born with an odd sort of sail-like wings of pliable ribs and elastic membranes which folded or extended at will. When closed sitting, they were "so close and compact to the body as no tailor can come up to it."

In Doorpt Swangeanti, the "Land of Flight," Peter Wilkins has amazing adventures in which wings play the chief part. He takes charge when a rebel army "of five thousand men, who flew in five layers, one over the other," attacks his in-laws. He commands the Glums to bring cannons, powder and shot from his wrecked ship, which they do.

Peter brings down the enemy so that "they fell so thick about me, that I had enough to do to escape being crushed to death by them." Paltock's striking romance was published in a number of editions and even translated into French and German.

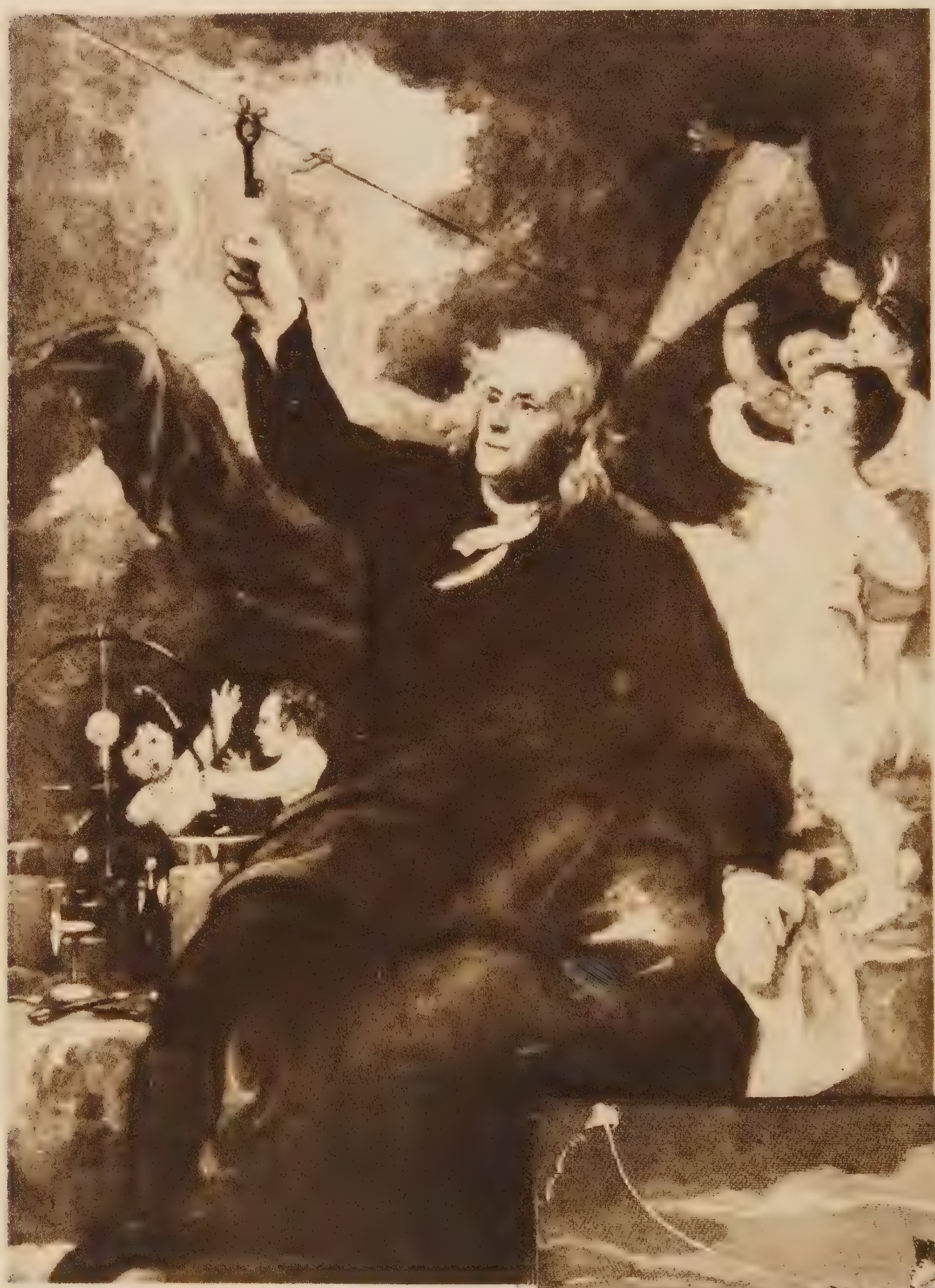
The print (above) shows Peter Wilkins directing the Aerial Battle; at left is "Youwarky, the Gawry," whom he married; both engravings are by Boitard for the first edition of "*Peter Wilkins.*"

First AERIAL RACE "*German vs. Briton*"—ENGLISH *Print* 1751



This Rare Engraving is by Boitard (1751). It appeared in "*The Scribleriad,*" a satirical poem by Richard Cambridge (1717–1802), a friend of Samuel Johnson. Here we see a Flying Briton, who, falling with crippled wings, grasps the foot of his adversary, a Flying German, and brings him down—thus saving himself from defeat.

AMERICA *Discovers* ELECTRIC FORCES *with* KITE—1752



BENJAMIN FRANKLIN and Electrical Research

Symbolic Portrait in Oils by Benjamin West (1738–1820)

FRANKLIN Experiments with LIGHTNING

Antique Woodcut (below) in Bella C. Landauer Collection

A MOMENTOUS EVENT now occurs. The Electrical Forces, upon which a New Age is to be founded, are discovered. We meet Benjamin Franklin (1706–1790), an American Statesman who is to appear further in this era of scientific developments.

European SCIENTISTS *Discover* INFLATION *with* GAS—1767

SCIENCE, whose votaries are that great race of men of all nations, which knows no boundaries, now enters into the war against bondage to the law of gravitation. A greater law must exist—the law of aerostation.

Henry Cavendish (1731–1810), Dr. Joseph Black (1728–1799), Joseph Priestley (1732–1804) and Tiberius Cavallo (1749–1809)—this is the succession of chemists and physicists who in Great Britain worked out formulas for the utilization of hydrogen gas.

Cavendish weighed, measured, ascertained the specific gravity of "inflammable air" (hydrogen gas) (1766). Dr. Black suggested to his chemistry class at Glasgow University that bladders filled with "inflammable air" would probably ascend in air (1767). Priestley, "Father of Modern Chemtry," announced experiments of exactly this kind (1774). Cavallo (Page 120) went further with hydrogen-filled bladders and soap bubbles and reported to the Royal Society (1781).

DR. JOSEPH BLACK (above) was born at Bordeaux of Scottish parents; educated at Belfast, studied chemistry at Glasgow University, and practiced medicine in Glasgow for fifty years. For 27 years, he was Professor of Anatomy and Chemistry at his Alma Mater. He could have been acclaimed inventor of the balloon had he chosen to base such a claim on the ascension of a calf bladder with hydrogen gas before a company of friends.

Portrait of Dr. Black (right) is from Kay's Original Portraits

Benjamin Franklin Statuette (below) by Niver, French sculptor, from life. Presented by Franklin to his friend, Fournier, French type-founder and inventor of point system for type. Now property of Fournier's grand-niece.

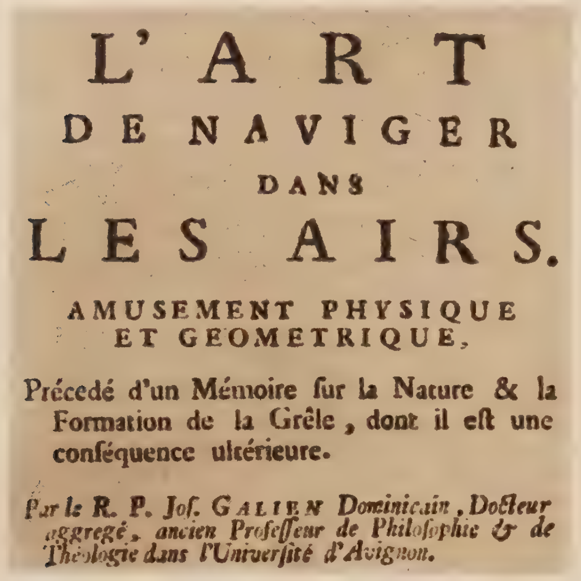
PORTRAIT OF CAVENDISH (Right)

Henry Cavendish, English chemist and physicist, was the eldest son of Lord Charles Cavendish. He was the first man to recognize hydrogen as a distinct substance; first to establish the relative densities of air and hydrogen; and in the course of this he filled a bladder with hydrogen gas and demonstrated that it would rise in air.

Cavendish established for all time the "lighter-than-air principle" which is fundamental to all ballooning. His long life was devoted wholly to science. He never married. His researches brought results which opened the way for myriad discoveries and inventions since.

Through inheritance, Cavendish during the latter half of his life was one of the richest men of his time, but his only public use of money was for scientific purposes and the dissemination of knowledge.

ITALY *and* FRANCE *Reveal Their* SOLUTIONS *to* PROBLEM

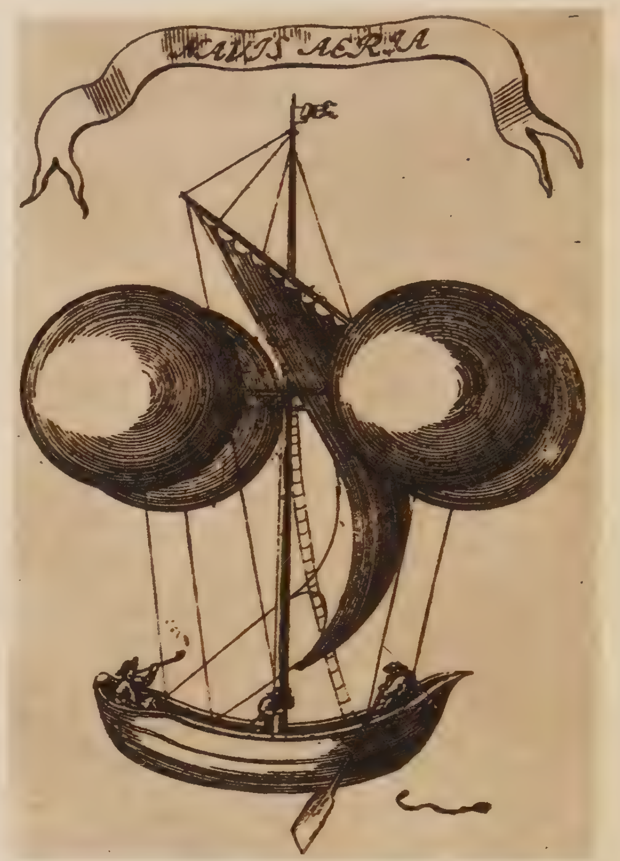


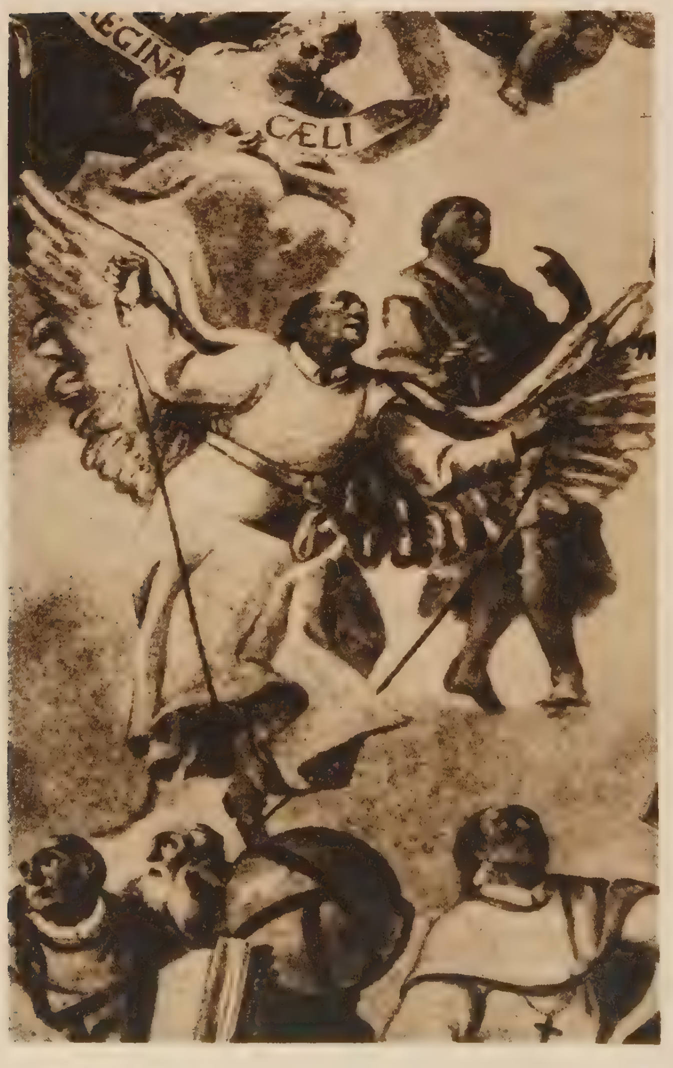
L'ART
DE NAVIGER
DANS
LES AIRS.

AMUSEMENT PHYSIQUE
ET GEOMETRIQUE,

Précedé d'un Mémoire ſur la Nature & la
Formation de la Grêle, dont il eſt une
conſéquence ultérieure.

Par le R. P. Joſ. GALIEN *Dominicain, Docteur
aggregé, ancien Profeſſeur de Philoſophie & de
Théologie dans l'Univerſité d'Avignon.*





HERE we find the first book to make mention of balloons. It contains a fantastic account of the "First Aerial Voyage Across the Atlantic" from Europe.

A Jesuit priest, Bernard Zamagna of Rome (1755–1820), outlined a flying boat which was really an amplification of Lana's (Page 108) in "*Navis Aeria et Elegiarum Monobiblos*" (1768). This highly fanciful tale tells in detail of the imaginary aerial journey of two travelers from Europe across the Atlantic to Peru, Canada and other countries. We record a facsimile of the original frontispiece (above).

One of the rarest books referring to the early history of aeronautics is "*L'Art de Naviger dans Les Airs*" (1755). It was written in verse by Joseph Galien (1699–1762), a Dominican professor of philosophy.

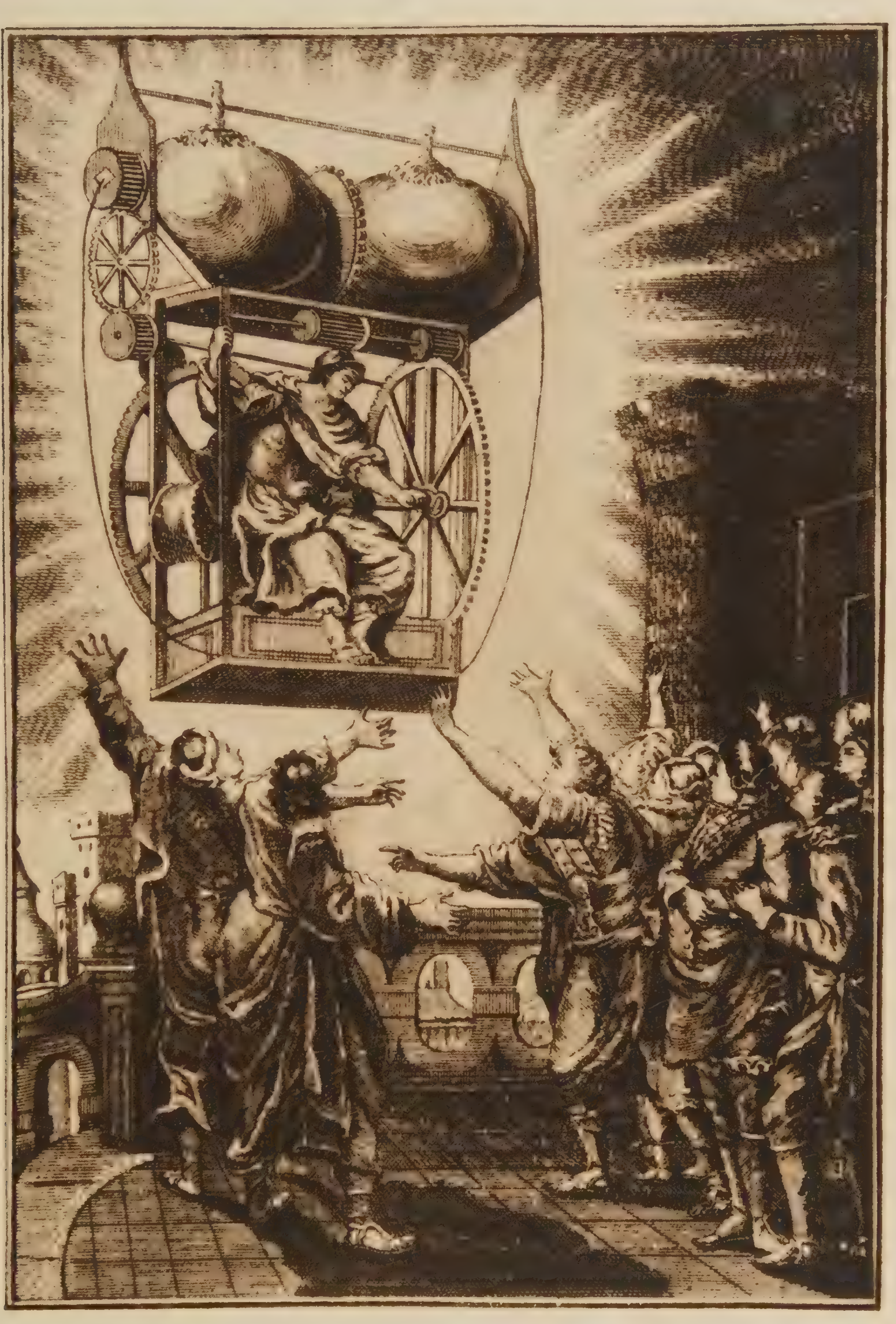
Galien laid down the principles of aerostation through filling large cloth balloons with air obtained at high elevations, which he conceived to be lighter than at lower levels. We present facsimile of title page of Galien's book (upper left).

Kaspar Mohr (left) was the "*Flying Priest of Wurttemberg.*" He is pictured on the ceiling of the Schussenried Cloister in that city as flying to heaven by working artificial wings with his hands and feet.

Friar Mohr was noted in Bavaria for his benefactions and good works among the people. He was credited with the ability to fly in the popular mind. Of scientific bent, he planned wings which he believed would support him in the air and actually tried to build them.

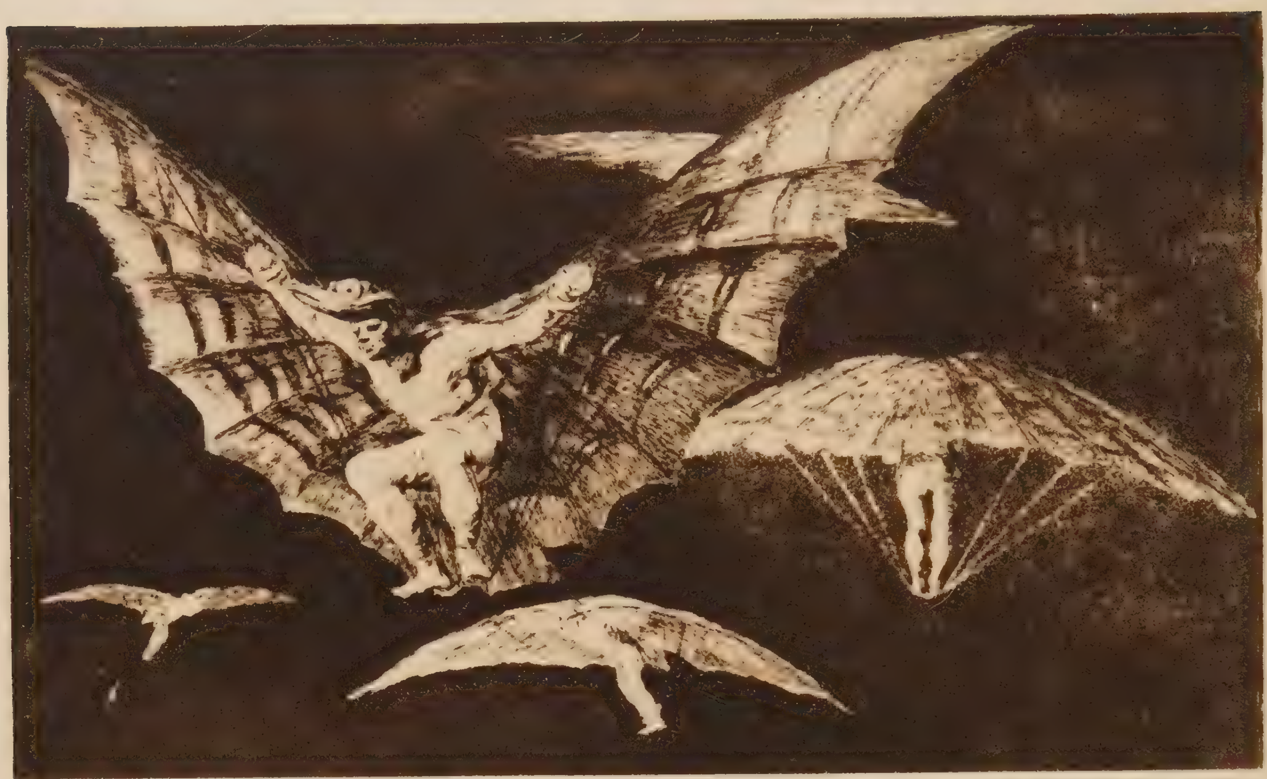
This reproduction of the mural painting (left) is from Collection of Dr. Franz Maria Feldhous in "Altmeister des Segelfluges."

FIRST DESIGN *of* ELECTRICAL *Flying* MACHINE—1775



AMERICA was engaged in the First Battles of the War for Independence at Lexington and Bunker Hill (1775) when the "First Electrical Flying Machine" made its appearance—in the pages of "*Le Philosophe sans Pretention, ou l'Homme Rare,*" written by Louis Guillaume de la Follie in Paris.

GOYA'S *Conception of* FLYING MEN *in* SPAIN—1775



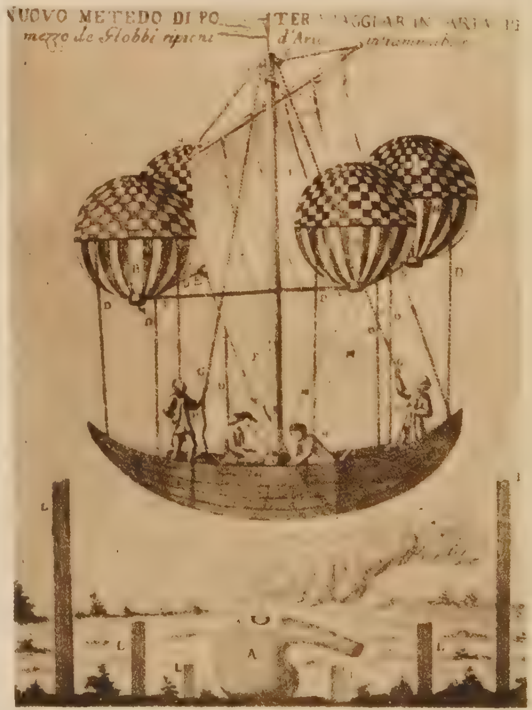
SPAIN, with its spirit of exploration which had carried it into the discoveries of the New World, realized the importance of the realms of the air—to the nation that conquered them.

Francisco Goya y Lucientes (1746–1828), Spanish painter, made this sketch of "The Flying Men" now in the Collection of the Bibliotheque Nationale in Paris.

TIBERIUS CAVALLO

Tiberius Cavallo (left) was sent to England from Naples (1771) for business experience, but chose science instead and never returned to Italy. He was first to fill soap bubbles with hydrogen gas ("inflammable air") and produced what were really the first balloons. He used to inflate paper bags with hydrogen, but these would not hold the gas. He used bladders for this successfully, but experimented only indoors.

Italian suggestion for applying recently-discovered hydrogen gas to Lana's airship. Rome (1784).

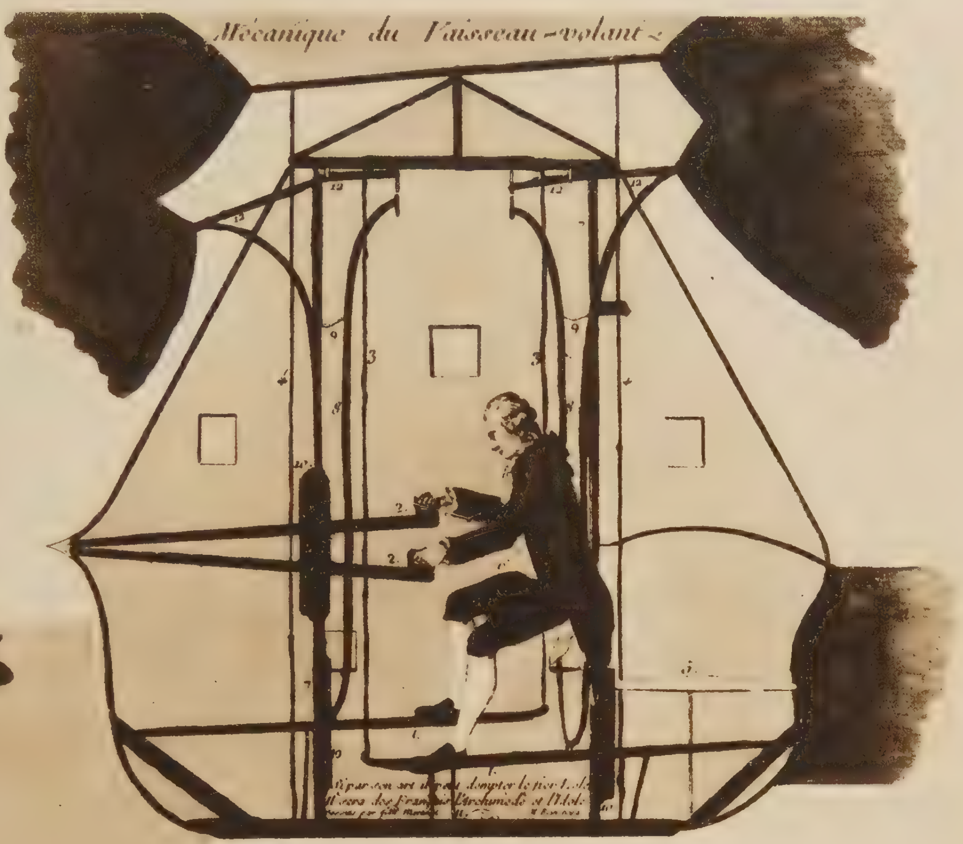


BLANCHARD *Constructs* FLYING MACHINE *in* PARIS—1781

We come now to Jean-Pierre Blanchard (1753–1809), a Frenchman who will appear repeatedly in these pages. We first find him designing and building the Flying Machine on the ornithopter principle (right) which never flew (1781).

He is soon to become, and remain for a generation, a leading French aeronaut and balloonist. First to combine the parachute with the balloon; first to cross the English Channel and first to ascend in America.

Old prints on this page are from the Bibliotheque Nationale, Paris.



BLANCHARD was a native of Les Andelys on the River Seine. Born of humble parentage and with little schooling, he possessed inventive imagination amounting to genius. He made investigations of the flight of birds.

Finally he built the "Vaisseau-Volant" (above). An account of this machine came out in the "*Journal de Paris*" (August, 1781). About the same time Martinet produced a set of four colored engravings, of which the above is one.

"It is not the material or form of wings which causes flight," wrote Blanchard, "but the volume and celerity of movement which should be as rapid as possible."

His Flying Chariot had four great wings. The operator sat inside and operated them with hand and foot levers. Blanchard never exhibited this "Vaisseau-Volant" in public, doubtless finding out privately that he could not move the wings fast enough to produce the desired result. Discouraged, and receiving no support, he was about to leave France (1782).

French scientists scoffed at his ideas. M. Coulomb, of the Academy of Sciences, read a paper in which he showed that "it would require wings two or three thousand feet long, moved three feet per second," for a man to raise himself into the air thus or sustain himself there. "Hence no one but an ignoramus would make an attempt of this kind."

The Duc de Chartres, who is later to back the brothers Robert in constructing the First Cylindrical Balloon, visited Blanchard, however, and encouraged him. We shall soon find him building a hydrogen balloon and adapting to it the wings and rudder of his earlier machine.

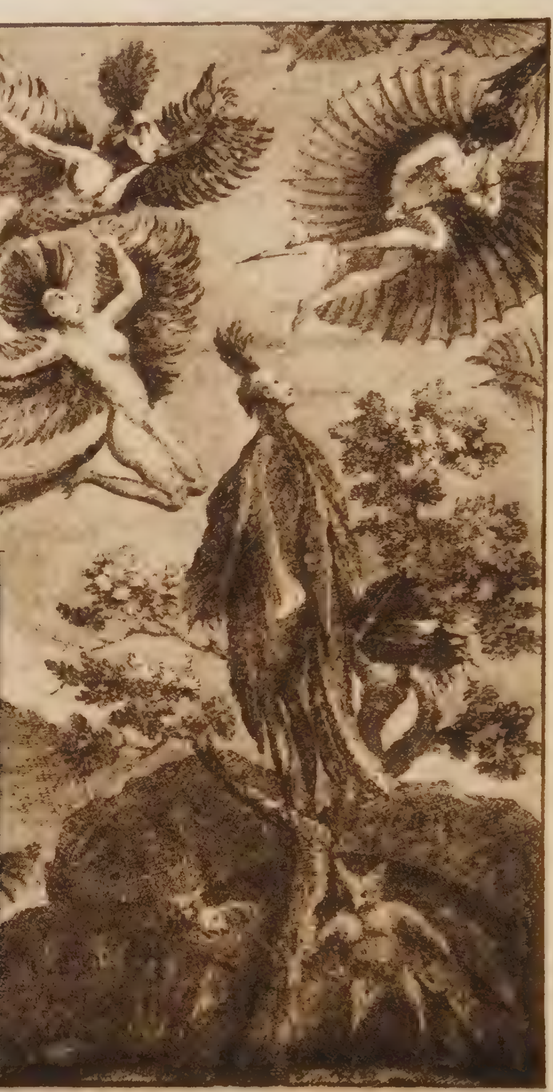
FRENCH NOVELIST *Presents His* FLYING ROMANCE—1781

FRANCE is now on the "Eve of Great Events." The world is soon to be startled by an "astounding achievement" (1783). In the meantime the air is filled with romantic ideas and speculations.

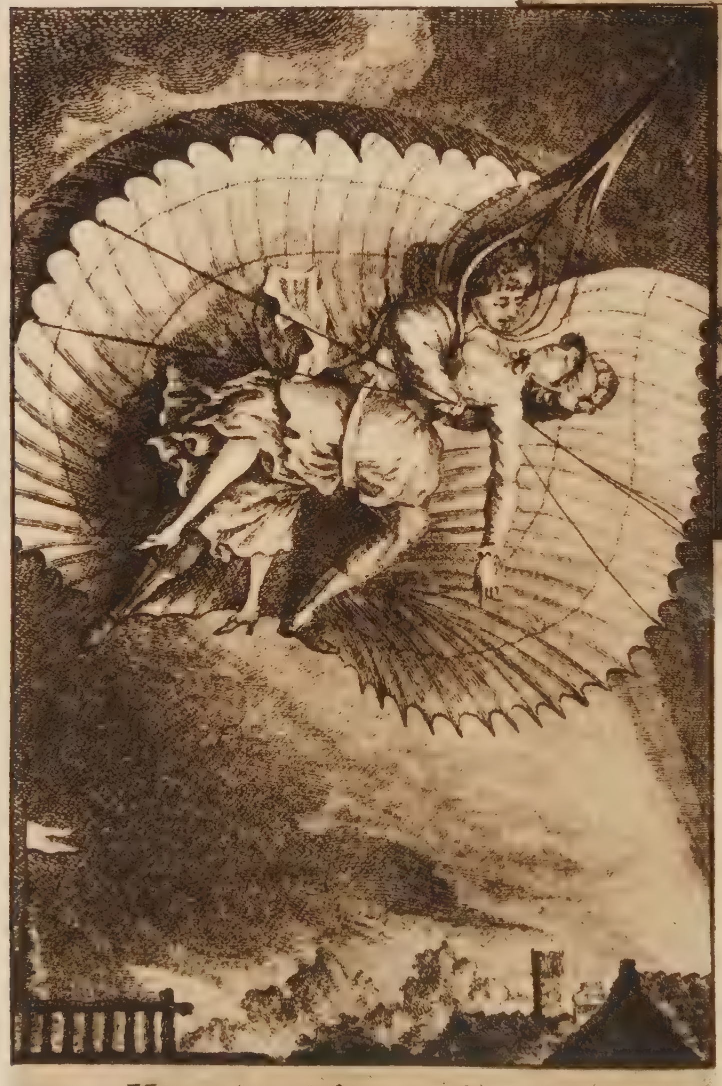
Restif de la Bretonne (Nicholas Edme Restif—1734-1806),—French novelist who wrote more than 200 books on every conceivable subject, and printed more than a few by his own hand, is forecasting the future.

"La Decouverte Australe par un Homme Volant ou le Dedale Francais," makes its appearance with the romantic and exciting experiences of Victorin, the Flying Man, among other flying men and women and in various parts of the earth.

There are thrills on every page in the fast-moving story, which is perfectly in the atmosphere of the times—flying and aerial movement throughout. About a hundred pages of it were suppressed in a France not unused to frankness, as too graphic in description.



Les Hommes-oiseaux



Victorin enlevant Christine.

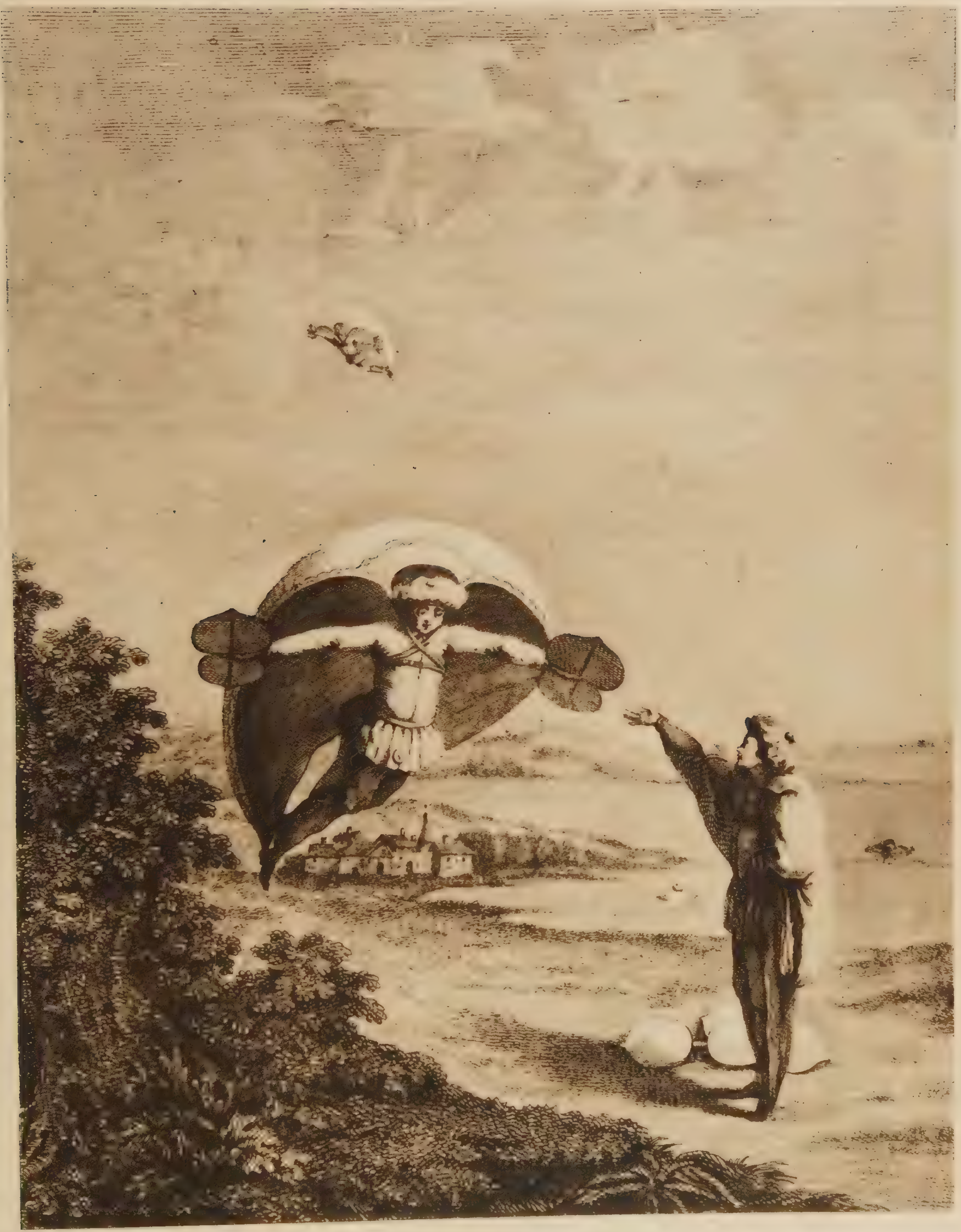
ANCIENT PRINTS OF FLYING ROMANCE

Victorin, the Flying Lover, in Bretonne's flying romance, becomes a popular hero. "The French Daedalus" not only finds his winged armor of advantage in dealing with his less fortunate earthbound friends—even to the point of abduction of the girl he is determined to make his own—but he meets other men and women equipped with wings.

He battles with birdmen and birdwomen, winged creatures resembling humans, but far more bird than man. Romances like this had much to do with popularizing the idea of human flight. They kept alive the spirit of aeronautics through the centuries. They reflect the desire of the human heart cherished through six thousand years—to fly.

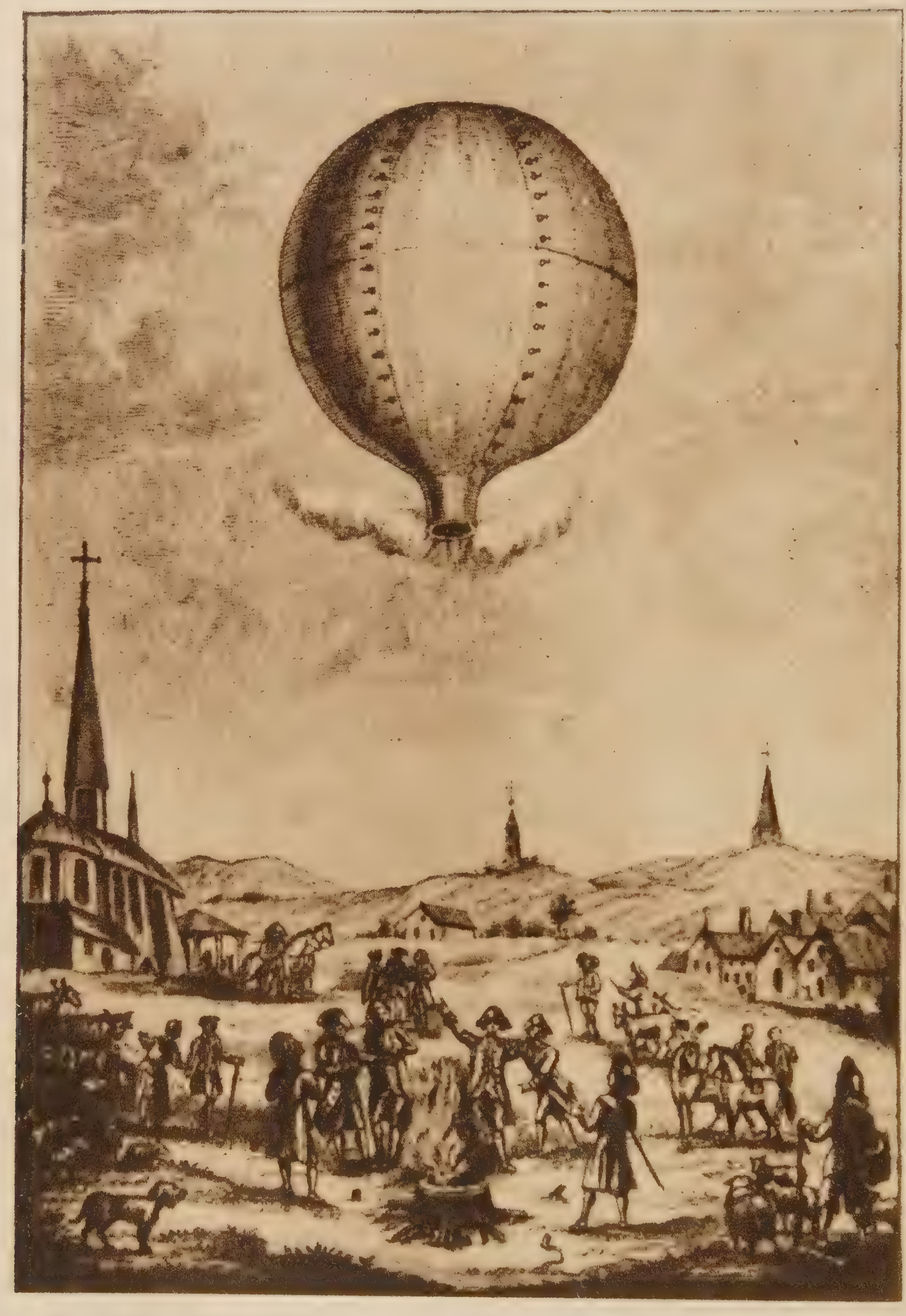
Engravings on this page are from the rare first edition of Restif de la Bretonne's book.

SOARING *Through* AIR *on* MAN-*Made* WINGS—*France*, 1783



"FLYING MEN" (1783)—Conception of Marin Fessard, French artist. Original in water colors. This reproduction is from an engraving made after the original—Now in the Collection of Baron Carl de Vinck in Paris.

“FIRST CARRIAGE *of the* AIR” *to* SAIL *into the* CLOUDS



THE GREAT MOMENT ARRIVES (June 5, 1783)—The First “Balon” in the Western World rises over Annonay in France. It is the Montgolfier—a spherical contrivance of linen-lined paper, 110 feet in circumference inflated with hot-air. It rises to a height of 6,000 feet, “thrilling all Europe,” and creating wide-spread debate among the Scientists. This rare old print by De Lorimier is in the valuable Dollfus Collection in Paris.

PART VI

First VICTORY—FRANCE "*Masters the* ELEMENTS"

With the MONTGOLFIERS *and the Epoch-making* EVENTS *in Days of* LOUIS XVI

THE First Great Victory in the Air belongs to France. The dream of the Ages comes true! The event "startles the world" and the Court of Louis XVI "seethes with excitement." King George III, of England, is astonished by its "momentous import." Frederick the Great, of the German Empire, perceives "a new force coming into the world."

Navigation in the air is proven not only a possibility—but a *fact.* More than 300,000 people gather to witness the "scientific demonstrations of the Montgolfiers" with the invention of the Balloon (1783).

With "tumultuous ovation," De Rozier, the French Scientist, rises into the air —the First Man in the World's History successfully to sail the clouds and inaugurate an era which is now to lead to man's complete victory over the elements.

It is at the moment when the American Nation is being born. The Peace Treaty between Great Britain and the United States is about to be signed in Paris. The American Revolution is over. Benjamin Franklin, the "First American Minister," witnesses the portentous events.

We present herewith official documents in which Franklin declares it a "Discovery of Great Importance . . . which may possibly give a new turn to human affairs." He immediately dispatches information to George Washington, impressing him with its "consequences."

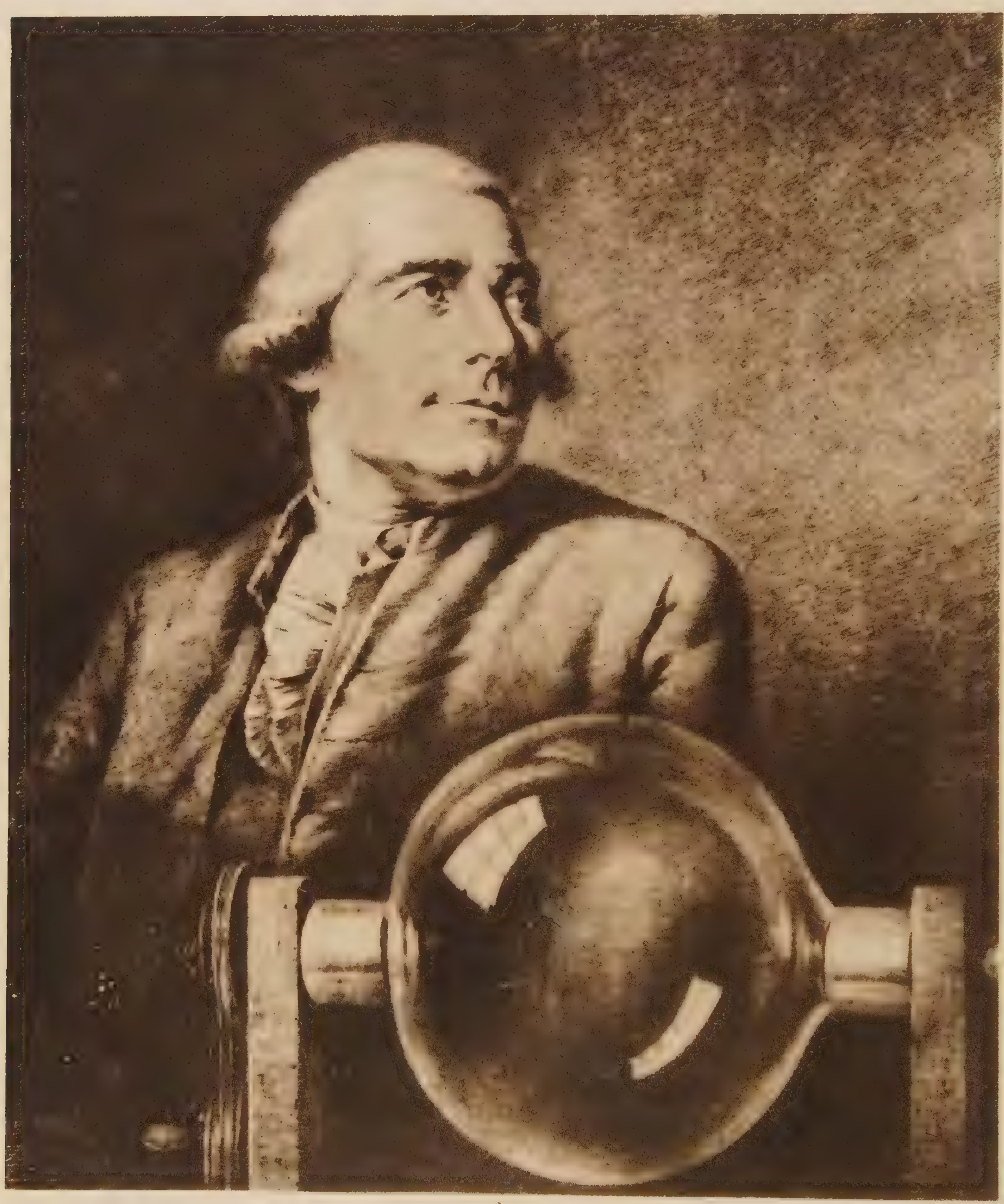
Government edicts are issued; secret documents are hurried by Diplomatists to their various nations. Monuments are erected and Royal decorations conferred. The Montgolfiers—Charles—Robert—De Rozier—D'Arlandes—"the men who rode the clouds in the first practical vehicles of the air"—are proclaimed as "Conquerors."

The contemporary records are recorded herein: The First Public Experiment with a hot-air Balloon by the Montgolfiers at Annonay (June 5, 1783)—The First Inflammable Air Balloon released from the Champ de Mars in Paris (August 27, 1783)—The First Ascent with Living Animals at Versailles, in Montgolfier's Balloon (September 19, 1783); The First Air Voyage of Human Beings—aeronauts—from Paris (November 21, 1783).

This is in the days of Marie Antoinette and the Marquis de Lafayette. Madame Du Barry has shortly before been banished from the Court. Voltaire, who had taken Europe by storm, has died—and Rousseau. Mozart is an idol in the Courts of Europe; Beethoven is just appearing; Gluck and Haydn are great musicians. Goethe and Hegel and Humboldt are in Germany.

Watt, in England, has just invented the steam engine. Printing and gun-powder are the principal inheritances from the preceding centuries. Franklin, the American, has opened vistas of the New Electrical Age to come. With the discovery of the principles of aerostatics, Aerial Navigation, in the realm of "lighter-than-air," is now to command the attention of the scientists of all nations—to be followed, like all new discoveries, with tragedies and Martyrdoms to a Great Cause.

MONTGOLFIERS *Startle* WORLD *with* DISCOVERY—1783



JOSEPH MICHEL MONTGOLFIER (1740–1810), elder of the "World-Famous Brothers" who invented the Balloon (1783). The Montgolfiers were sons of a wealthy paper manufacturer of Annonay, France, 38 miles from Lyons, who had retired, leaving them his business, which continues in active operation today. Portrait of Joseph Montgolfier in the Museum of Lyons.

"INVENTEURS *de* BALON"—PROGENITORS *of* AIRSHIP

Joseph Montgolfier (left) was dreaming in a chimney corner in Avignon in the Summer of 1782, when Spain was laying siege to the Rock of Gibraltar and the beleagured British could not leave by land or sea.

"Why not by air?" he asked himself, contemplating a picture of Gibraltar on the opposite wall. His mind at once busied itself with the problem of aerial locomotion.

He began calculating weights of given surfaces of paper, or taffeta. He made a small paper balloon with a good-sized opening. When he held this to the fire to collect smoke within it the hot air which quickly filled the tiny affair carried it to the ceiling—to the astonishment of his hostess and his own great joy:

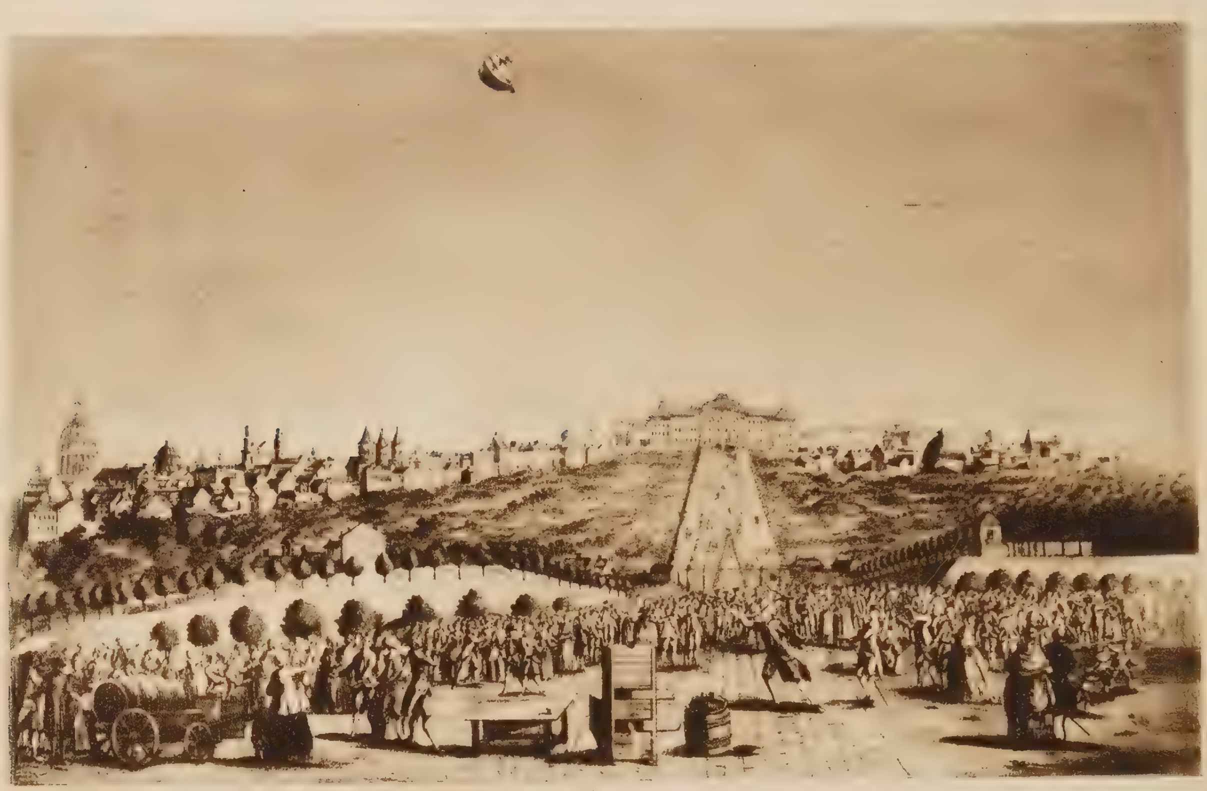
"Prepare a supply of taffeta and cordage, and you shall see the most astonishing thing in the world!" he wrote his brother Etienne at Annonay—and hurried home.

E. MONGOLFIER.

JACQUES ETIENNE MONTGOLFIER (1745–1799) is the younger of the brothers who invented the balloon. Born in Annonay, they worked together. Trained in science and mathematics, they undertook to carry on the family paper mill on the death of an elder brother.

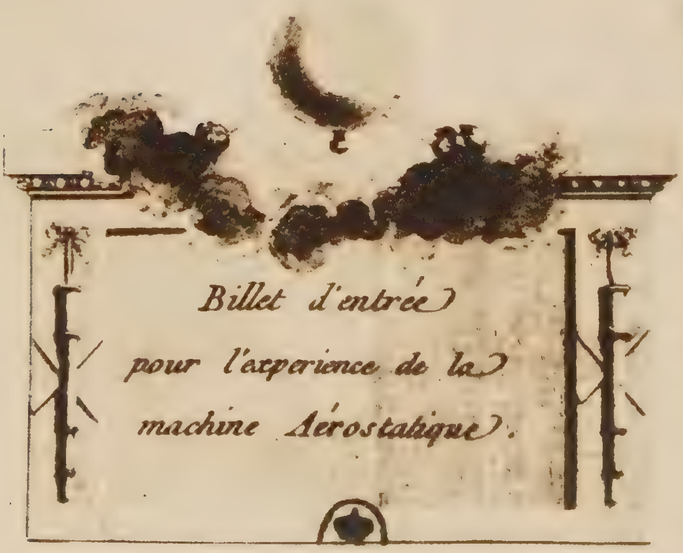
Ten years of painstaking experiment preceded their public triumph (June, 1783). They first sent up hot air balloons (like that on the left) in April of that year. This portrait is from an engraving in the Collection of the Bibliotheque Nationale in Paris, after a painting by Le Grand held in possession of the family.

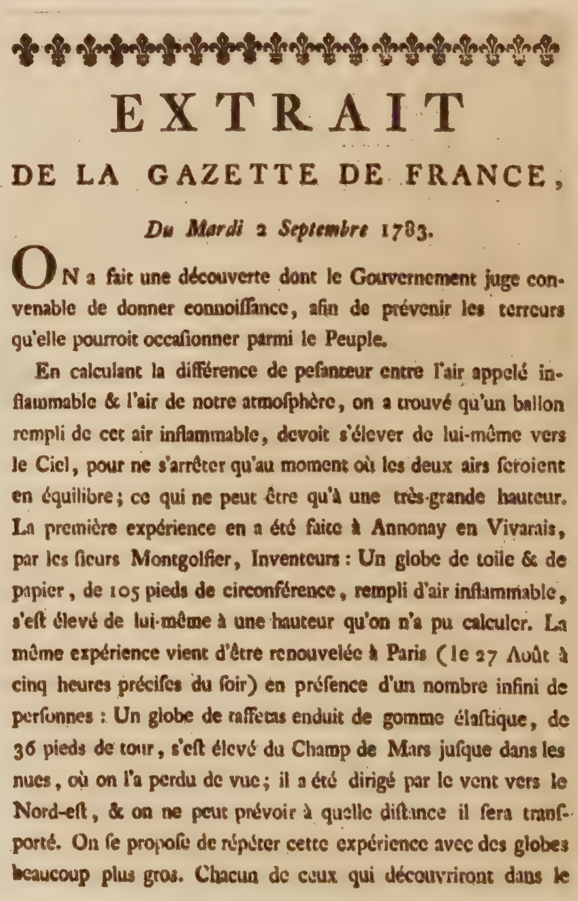
Human INGENUITY *Overcomes* LAW *of* GRAVITATION—1783


Experience de la Machine Aerostatique
de Mr de Montgolfier

THE Balloon of the Montgolfier brothers, first in the world to ascend in public, rises before a great throng of neighbors and friends in the French town of Annonay, home of the Montgolfiers.

This old engraved print is in the Harry Guggenheim Collection. The ticket to the Montgolfier balloon ascension (below) is in the Collection of the Bibliotheque Nationale in Paris—also the reproduction of a Broadside issued by the French Government (1783) to inform the public that "the Balloon Has Been Invented."





EXTRAIT

DE LA GAZETTE DE FRANCE,

Du Mardi 2 Septembre 1783.

ON a fait une découverte dont le Gouvernement juge convenable de donner connoiſſance, afin de prévenir les terreurs qu'elle pourroit occaſionner parmi le Peuple.

En calculant la différence de peſanteur entre l'air appelé inflammable & l'air de notre atmoſphère, on a trouvé qu'un ballon rempli de cet air inflammable, devoit s'élever de lui-même vers le Ciel, pour ne s'arrêter qu'au moment où les deux airs ſeroient en équilibre; ce qui ne peut être qu'à une très-grande hauteur. La première expérience en a été faite à Annonay en Vivarais, par les ſieurs Montgolfier, Inventeurs: Un globe de toile & de papier, de 105 pieds de circonférence, rempli d'air inflammable, s'eſt élevé de lui-même à une hauteur qu'on n'a pu calculer. La même expérience vient d'être renouvelée à Paris (le 27 Août à cinq heures préciſes du ſoir) en préſence d'un nombre infini de perſonnes: Un globe de taffetas enduit de gomme élaſtique, de 36 pieds de tour, s'eſt élevé du Champ de Mars juſque dans les nues, où on l'a perdu de vue; il a été dirigé par le vent vers le Nord-eſt, & on ne peut prévoir à quelle diſtance il ſera tranſporté. On ſe propoſe de répéter cette expérience avec des globes beaucoup plus gros. Chacun de ceux qui découvriront dans le

COURT *of* LOUIS XVI *Decorates* MONTGOLFIERS—1783

THE invention of the balloon by Joseph and Etienne Montgolfier was no sudden or fortuitous happening. Joseph was 43: Etienne, 38. They were scientists, by inclination and education.

To get up into the air, to sustain one's self there, and move about at will—this was the ardent dream of these devoted Frenchmen.

They conducted hundreds of experiments. Paper bags are the ancestors of human flight. The Montgolfiers, being a paper-manufacturing family, naturally experimented with paper containers.

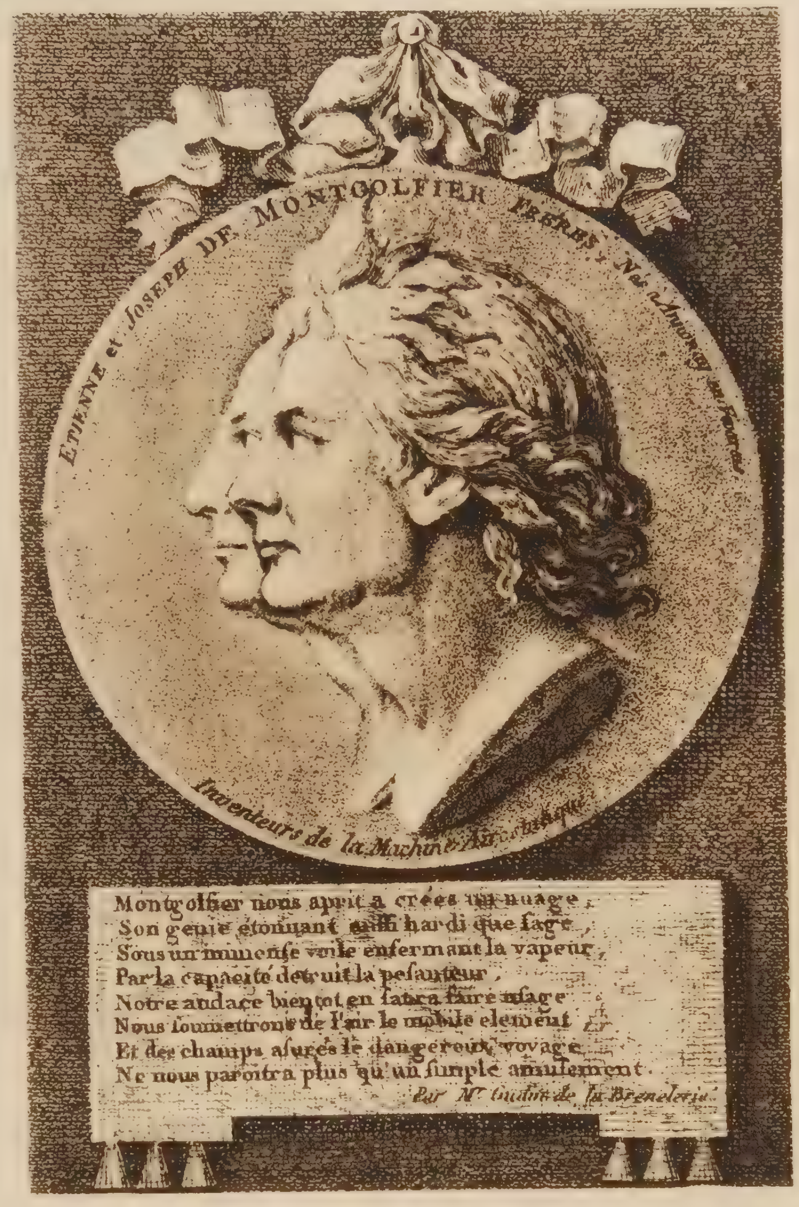
Study of cloud movements led them to try filling these with steam, which condensed so rapidly the bags would not rise. Smoke was little better; it escaped too readily through the pores of the paper. They tried hydrogen gas; paper would not hold it. Yet paper bags did hold hot air, and these rose to the ceiling.

Their problem was solved! Paper bags started the World-in-the-Air. Soon linen, lined with paper, and then taffeta silk succeeded the plain paper.

The Montgolfiers' first success with paper bags was at Avignon (November, 1782). Then came a private exhibition at Annonay (April, 1783) when a paper "balon" rose 1,000 feet.

From all over the State of Viverais throngs came to witness their first public demonstration, with a huge 110-foot-round bag of 23,430 cubic feet capacity (June 5, 1783).

Balloons quickly became as much the vogue of the day as airplanes are today. The Montgolfiers were popular heroes, feted and decorated. Here is an engraving (right) by Roze le Noir, after a bas relief by Jean Antoine Houdon (1740–1828), noted French sculptor who made the bust of Washington in the Virginia State Capitol.


ETIENNE et JOSEPH DE MONTGOLFIER FRERES, Nés a Annonay en [illegible]
Inventeurs de la Machine Aérostatique
Montgolfier nous apprit a créer un nuage;
Son genie étonnant aussi hardi que ſage,
Sous un immenſe voile enfermant la vapeur,
Par la capacité detruit la peſanteur,
Notre audace bientot en ſaura faire uſage
Nous ſoumettrons de l'air le mobile element
Et des champs aſurés le dangereux voyage
Ne nous paroitra plus qu'un ſimple amuſement.
Par Mr Gudin de la Brenellerie

MONTGOLFIER BAS RELIEF BY HOUDON
Original (above) in Musee de Carnavalet in Paris

BAS RELIEFS IN SEVRES MUSEUM
Originals (below) were made in Sevres-ware

First EXPERIMENTS *with* HYDROGEN GAS *in* FRANCE—1783

THE French Academy of Sciences learned with intense interest of the Montgolfier "Conquest of the Air."

Professor J. A. C. Charles (1746-1823), distinguished physicist, had been experimenting with hydrogen gas, but could not get paper to hold it.

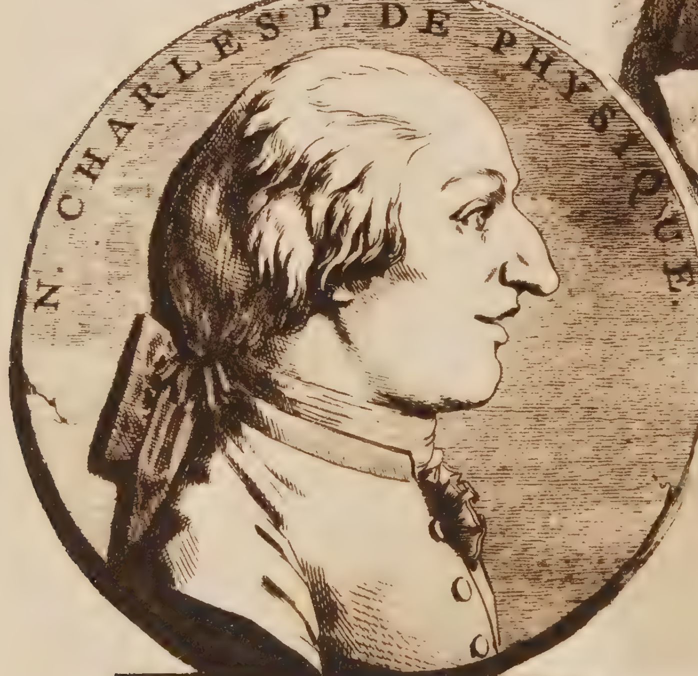
After the Montgolfier triumph, Bartholemy Faujas de Saint Fond (1741–1819), geologist of note, organized a public subscription which enabled Dr. Charles to avail himself of the discovery of the brothers Robert that rubber was soluble. The latter constructed for him a balloon of taffeta impregnated with rubber.

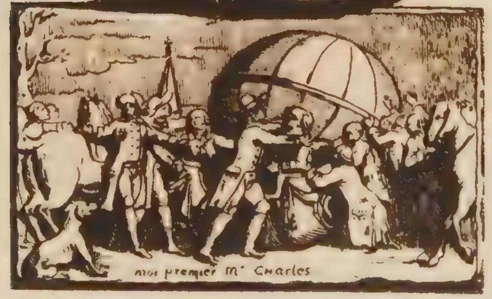
The First Hydrogen Balloon—10 feet in diameter, without car or rider—was sent up from the Champ de Mars in Paris (August 27, 1783) before an assemblage which thronged every thoroughfare and darkened every housetop.

It rose to a height of more than a half mile and disappeared in the clouds, coming to earth again in the village of Gonesse, 15 miles away.

The portrait engraving of Dr. Charles (right) by Bartly is in the Bella C. Landauer Collection, New York. The engraving (below) is in the Bibliotheque Nationale in Paris.

Institut Royal de France.
Académie des sciences. (Physique génle.)
CHARLES,
(Jacques, Alexandre, César.)

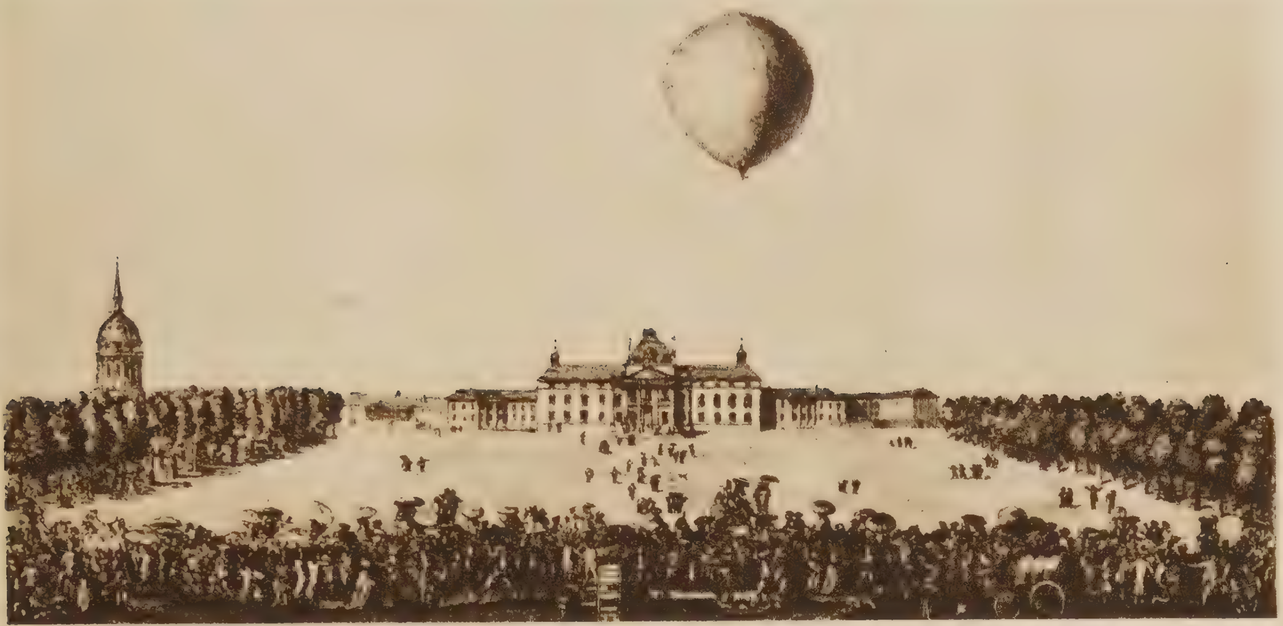

N. CHARLES P. DE PHYSIQUE



The ascent of this First Hydrogen Balloon was an event of tremendous popular moment in Paris. During the night (August 26, 1783) the balloon was moved through the Paris streets to the Champ de Mars by the light of torches, surrounded by a cortege and guarded by foot and horse troops.

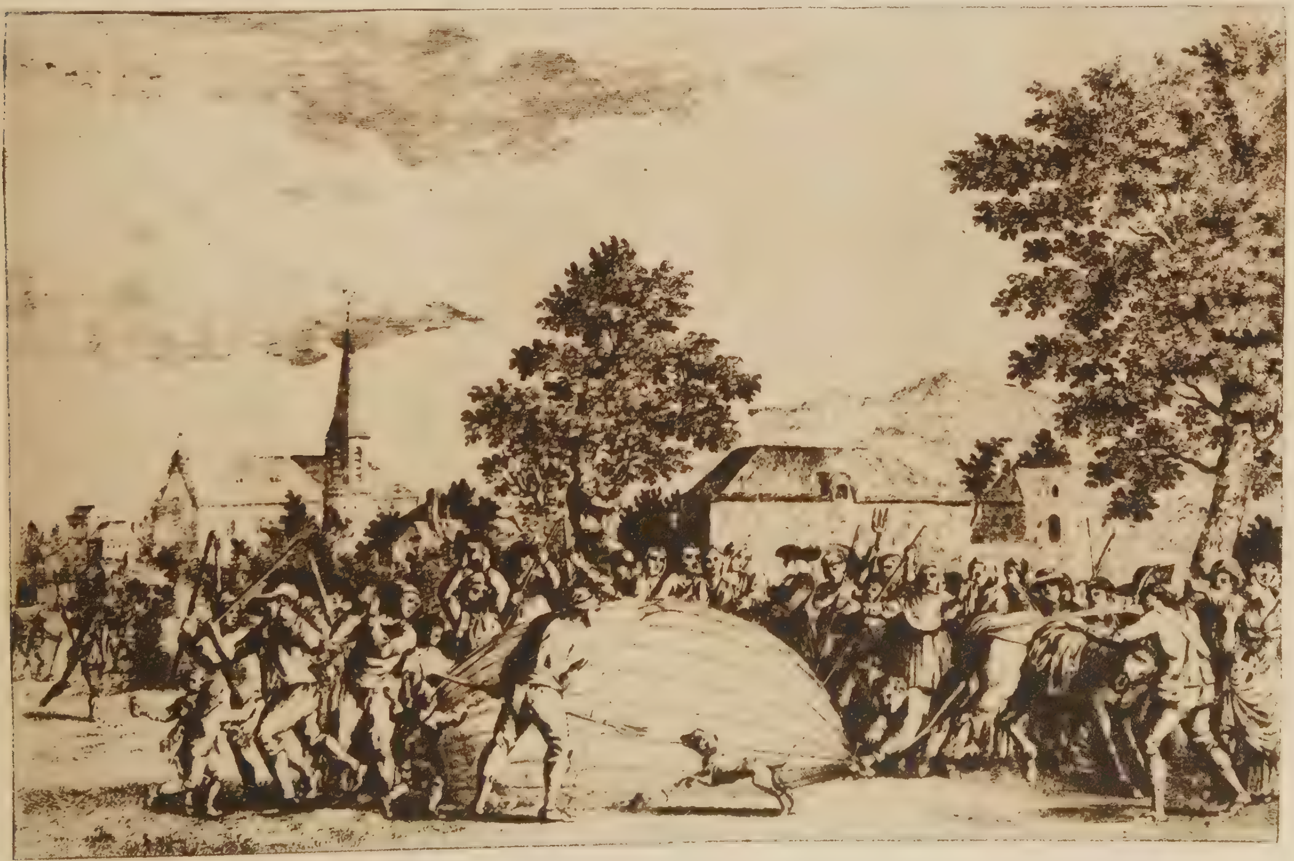
The populace knelt with bared heads as the "wonder" went by. The next day all Paris was en fete. A hush fell over the city as the booming of cannon announced the loosing of the balloon, which rose at 5 P. M.

CHARLES *and* ROBERT *Send* UP *First* GAS *Miniature*—1783



FIFTY THOUSAND people witness the ascent of The First Hydrogen Balloon in the world. It "takes the air" under command of Professor Charles at Champ de Mars in Paris (August 27, 1783) as told on the preceding page. This old print (above) shows it rising in a light shower of rain.

The old French print (below) in the British Museum, shows the villagers of Gonesse viewing with superstitious awe and dread the "Visitor from the Skies" as Charles' balloon falls in their midst. Muzzle-loaders and pitchforks are called into play for their defence against this "writhing demon from the clouds."

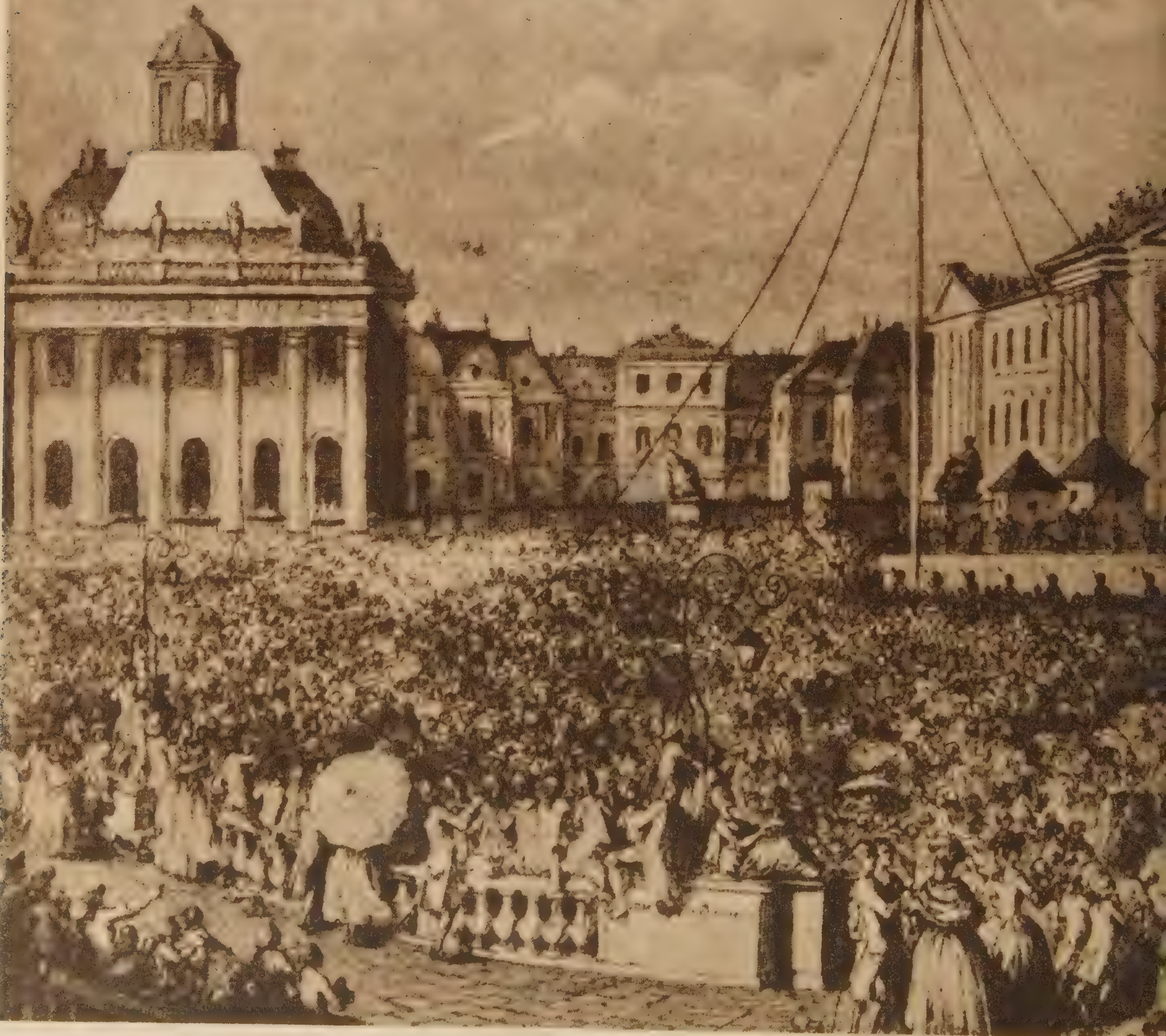


First AIR VOYAGE in WORLD'S HISTORY

"To Carry LIVING Creatures"

Throngs Gather at VERSAILLES Palace Before KING LOUIS XVI, MARIE ANTOINETTE and the ROYAL COURT to Witness the Famous ANIMAL ASCENT—The "MONTGOLFIER" Rises 1,500 Feet, Carrying a SHEEP, COCK and DUCK which Safely Land TWO MILES DISTANT in the Forests—SEPTEMBER 18, 1783

HISTORIC PRINT in BIBLIOTHEQUE NATIONALE in PARIS



Historic CARICATURES *of World-Famous* "ANIMAL ASCENT"

THE First Ascent in the world with "Living Creatures" took place September 19, 1783. The world's first passengers were a sheep—a cock—a duck. In a wicker cage, suspended from a hot air balloon, they rose before the Palace at Versailles in the presence of the King.

Joseph Montgolfier had come to Paris to construct the balloon. Its bag was of waterproofed linen, 46 feet in diameter, and ornamented in oil colors.

At 1 P. M., he lit the fire of straw and shavings beneath it. In eleven minutes the great globular affair sailed away.

It rose some 1400 feet and drifted about two miles, landing after eight minutes in a wood at Vaucresson. Its passengers were none the worse for their aerial journey—except the sheep had stepped on the cock.

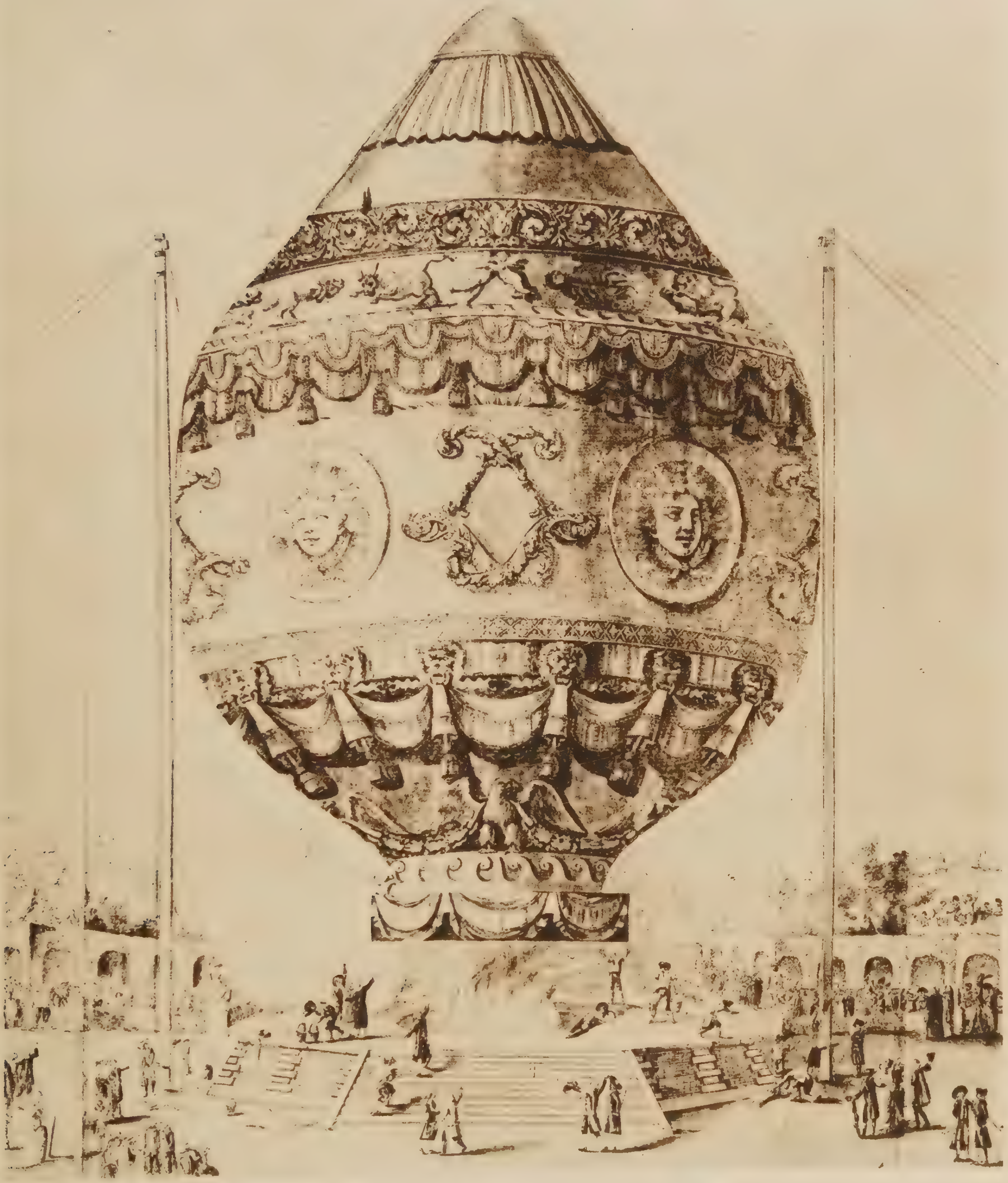
Louis XVI granted Joseph Montgolfier an annual pension of $200. The King bestowed upon Etienne the Order of St. Michael; and upon their father a patent of nobility. Both were made members of the Legion of Honor and a scientific deputation headed by Faujas de Saint Fond presented Etienne with a Gold Medal.

WE now come to the First Human Ascent as related on the opposite page. Etienne Montgolfier's greatest ambition was to send up *human passengers.*

He constructed a balloon 85 feet high and 48 across, of 100,000 cubic feet capacity, lemon-shaped, highly decorated, with a cylindrical neck 16 feet in diameter. Around this was a wicker balcony 3 feet wide, to carry the aeronauts, also bundles of straw for fuel and pails of water and sponges to extinguish incipient conflagrations.

He first experimented with this balloon, holding it captive with ropes in the Jardin Reveillon in the Faubourg St. Antoine. Two men stood in the captive balloon, 80 feet in air (October 15, 1783) remaining aloft 4 minutes, 35 seconds.

FIRST ASCENT *of* HUMAN BEINGS *into* HEAVENS—1783



TWO Human Beings "Sail the Clouds", the triumphant culmination of 5000 years of human aspirations (November 21, 1783). Nearly a half million people stand "awe-stricken" as Pilatre de Rozier, great French Scientist, with the Marquis d'Arlandes, rise in the elegantly decorated Montgolfier from the Garden of Chateau de la Mouette in Paris. The event takes place at 2 o'clock. The "Heroic Adventurers" rise to 300 feet—salute the throngs below and sail across Paris. A south wind carries them five miles in twenty minutes—and they land safely in a field. Print in the famous Paul Tissandier Collection, in Paris.

D'ARLANDES—*First* PASSENGER—*Scion of French* NOBILITY

HERE, we look upon the "Intrepid Conquerors"—Pilatre de Rozier (below) — and the Marquis d'Arlandes (left)—The First Aerial Voyagers (November 21, 1783).

De Rozier was the head of the Royal Museum. King Louis XVI refused to allow the brilliant young scientist—aged 29 years—to risk his life. The King commanded that "two French criminals sentenced to death" should be the subjects of the scientific experiment.

"Permit vile criminals to have the glory of the First Aerial Voyage?" exclaimed de Rozier in consternation. *"Non! Non!"*

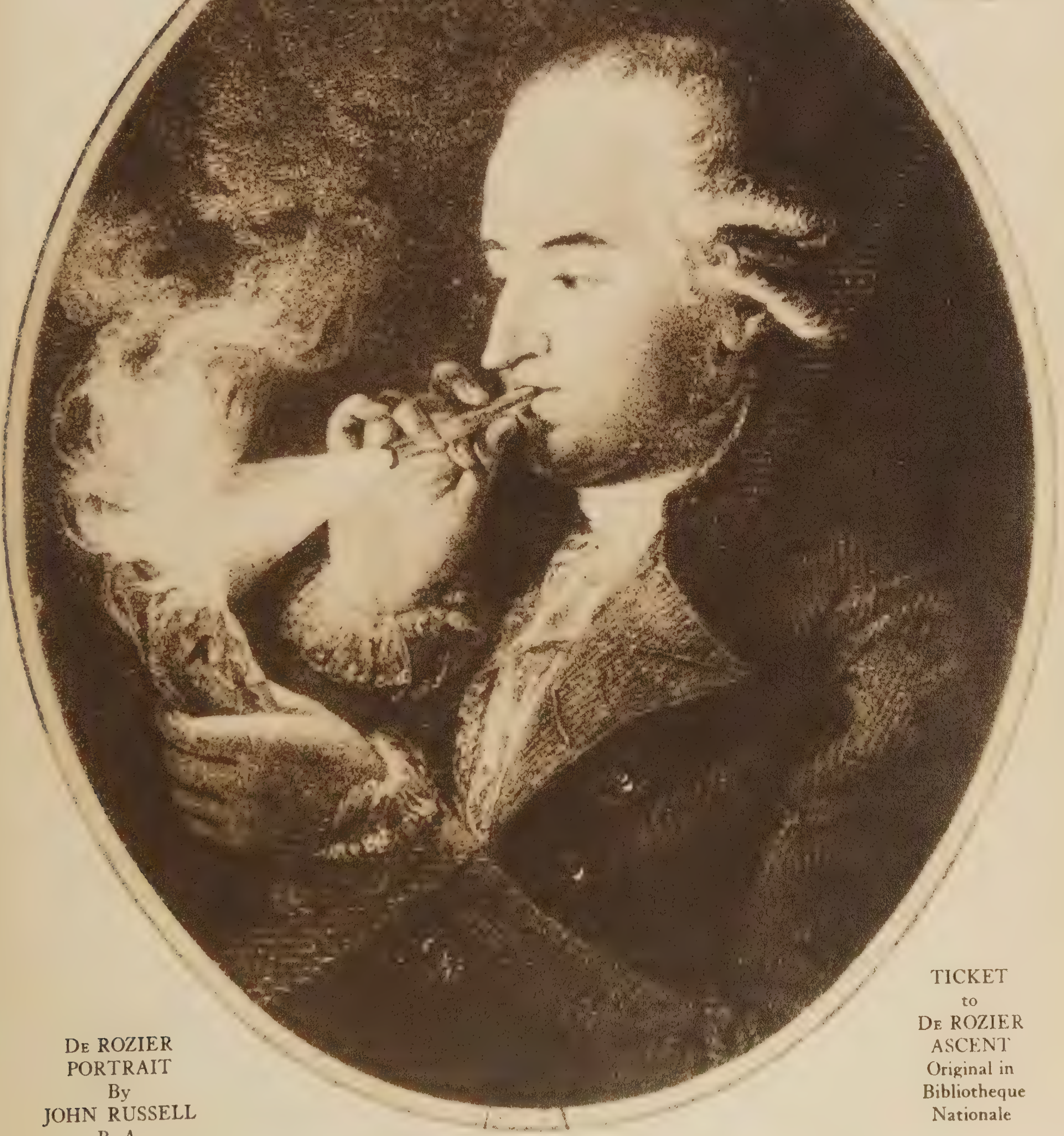
He induced his friend, the Marquis d'Arlandes to intercede with the King. The Marquis won by his chivalry in agreeing to accompany de Rozier on the "hazardous adventure."

King Louis XVI with Marie Antoinette and the Royal Court, and a multitude of nobility and commoners, saw the First Human Beings journey into the air and write their names into world history.

The Marquis d'Arlandes recorded their experiences to a member of the French Academy. He was so excited when they rose into the air that he forgot to "do his work," which was to keep the balloon filled with hot-air.

They did not descend until they had gone beyond the boulevards. "The moment we touched the ground, I—perceived the upper part of the machine about to press gently on my head," records the Marquis. "I pushed it back, jumped out of the gallery and was surprised to find it (the balloon) perfectly emptied and quite flattened."

DE ROZIER—*First* MAN *in* WORLD *to* SAIL *in the* AIR—1783



DE ROZIER
PORTRAIT
By
JOHN RUSSELL
R. A.

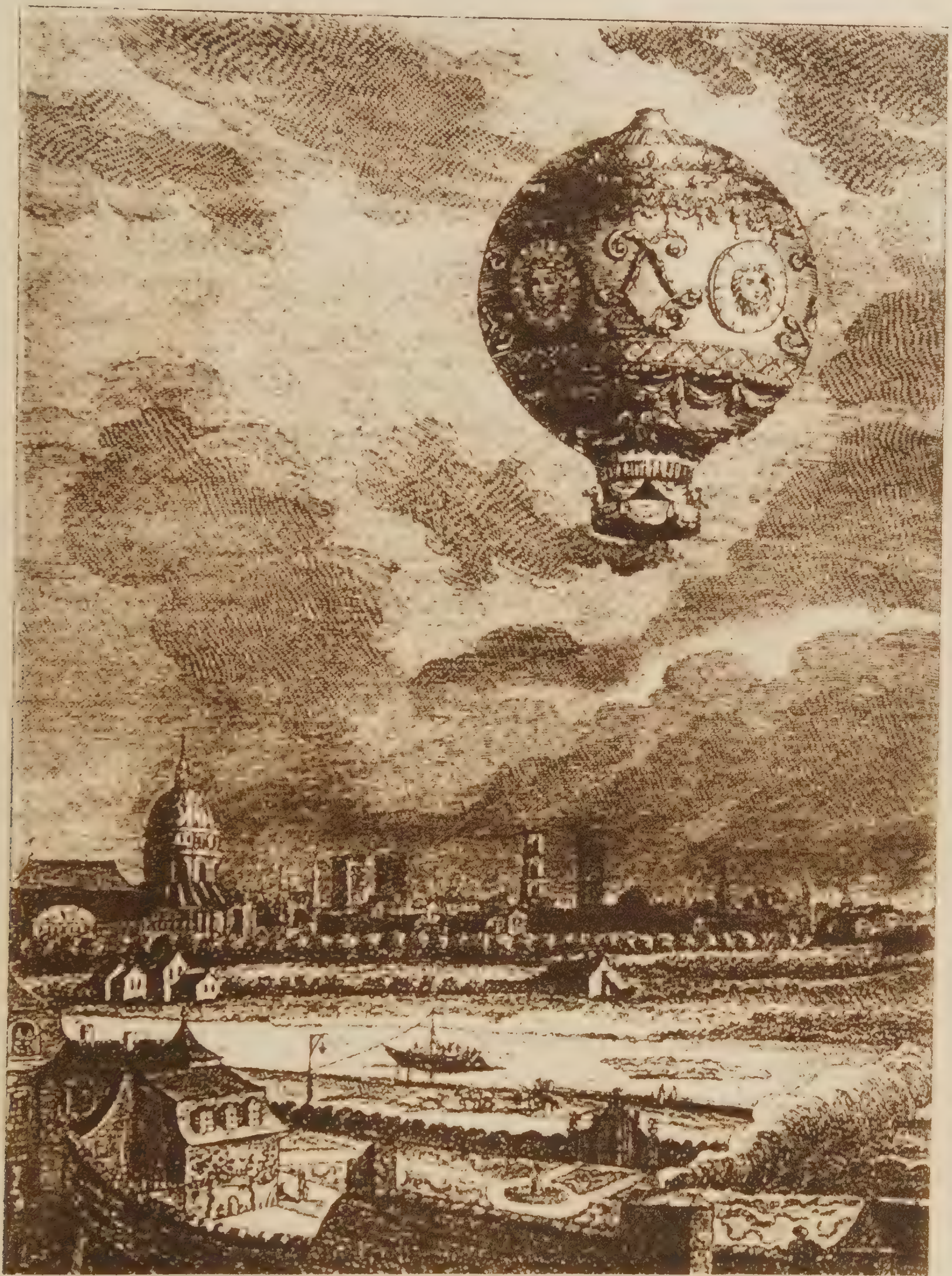
TICKET
to
DE ROZIER
ASCENT
Original in
Bibliotheque
Nationale

First AMERICAN *to Witness* FLIGHT *of* "AIRSHIP"—1783

Painting
By
DUPLESSIS
in the
Metropolitan
Museum

BENJAMIN
FRANKLIN
First
American Minister
at Paris

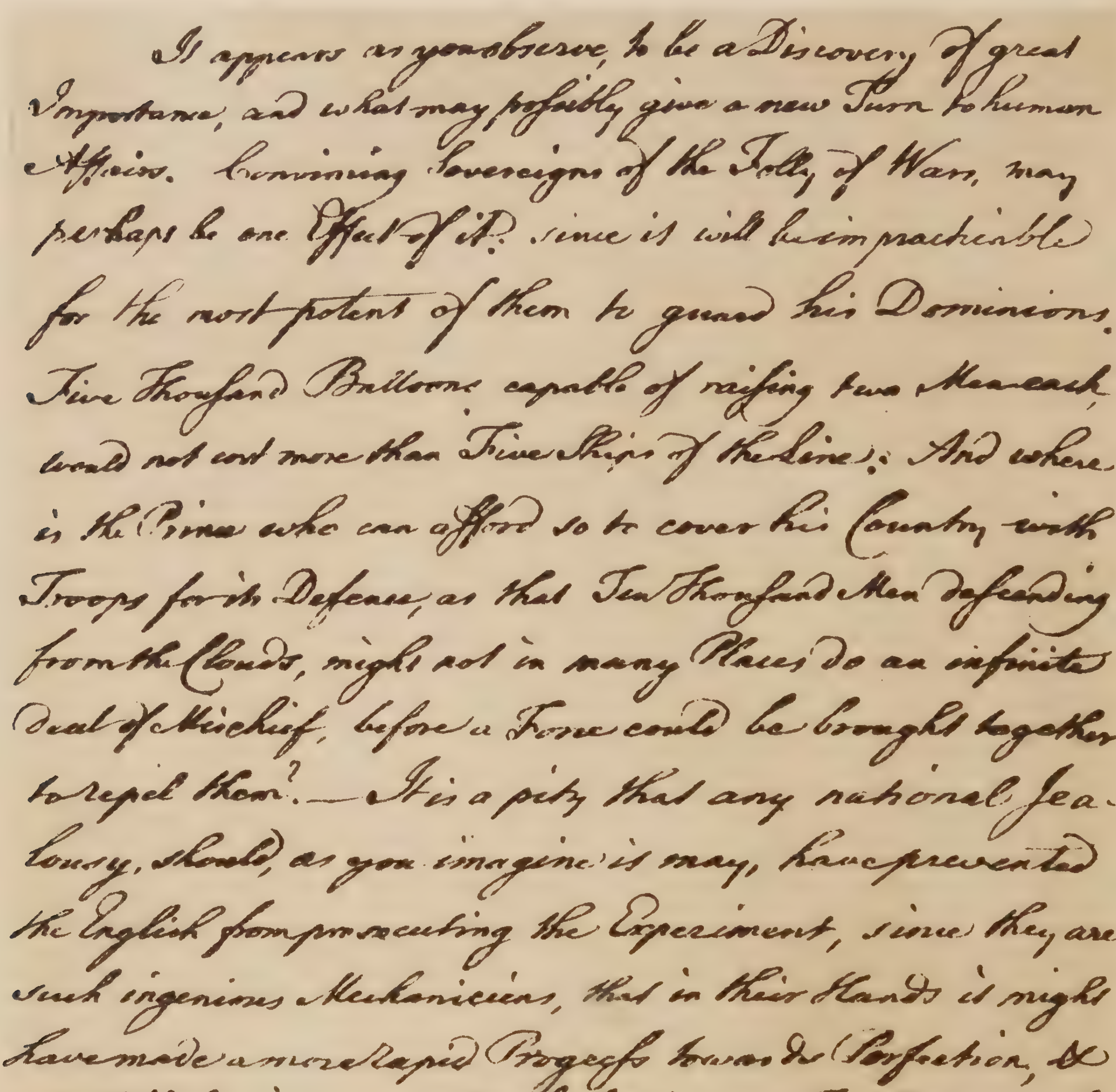
GREAT EVENT *Seen from* AMERICAN *Ministry at Passy*—1783



BENJAMIN FRANKLIN was the first American to witness an air voyage. In Paris as American delegate and commissioner, he saw the first Montgolfier Balloon go up at Annonay (June 5, 1783). Franklin was with the Royal Party at the Animal Ascent at Versailles (September 19, 1783). He saw the first humans, de Rozier and d'Arlandes, make their ascent (November 21, 1783); that same evening Ftienne Montgolfier and d'Arlandes visited him at his Passy home to discuss the affair.

Franklin had seen Dr. Charles' first little hydrogen balloon go up from the Champ de Mars; he saw Charles and Robert ascend in the first hydrogen balloon to carry passengers. "Being a little indisposed, and the Air cool and the ground damp," he writes, "I chose to stay in my Carriage near the Statue of Louis XV, where I saw all that passed." Old print (above) from engraving by de Lorimier.

Facsimile LETTER *by* BENJAMIN FRANKLIN—*Paris* 1783



It appears as you observe, to be a Discovery of great Importance, and what may poſsibly give a new Turn to human Affairs. Convincing Sovereigns of the Folly of Wars, may perhaps be one Effect of it: since it will be impracticable for the most potent of them to guard his Dominions. Five Thouſand Balloons capable of raiſing two Men each, would not cost more than Five Ships of the Line; And where is the Prince who can afford so to cover his Country with Troops for its Defense, as that Ten Thouſand Men deſcending from the Clouds, might not in many Places do an infinite deal of Mischief, before a Force could be brought together to repel them? — It is a pity that any national Jealousy, should, as you imagine it may, have prevented the English from proſecuting the Experiment, since they are such ingenious Mechanicians, that in their Hands it might have made a more rapid Progreſs towards Perfection, & all the Utility it is capable of affording. — The Balloon of

THIS remarkable document is one of the most important in the whole record of Man's Conquest of the Air: Benjamin Franklin from Paris (January 16, 1784) to Dr. Ingenhaus in Vienna.

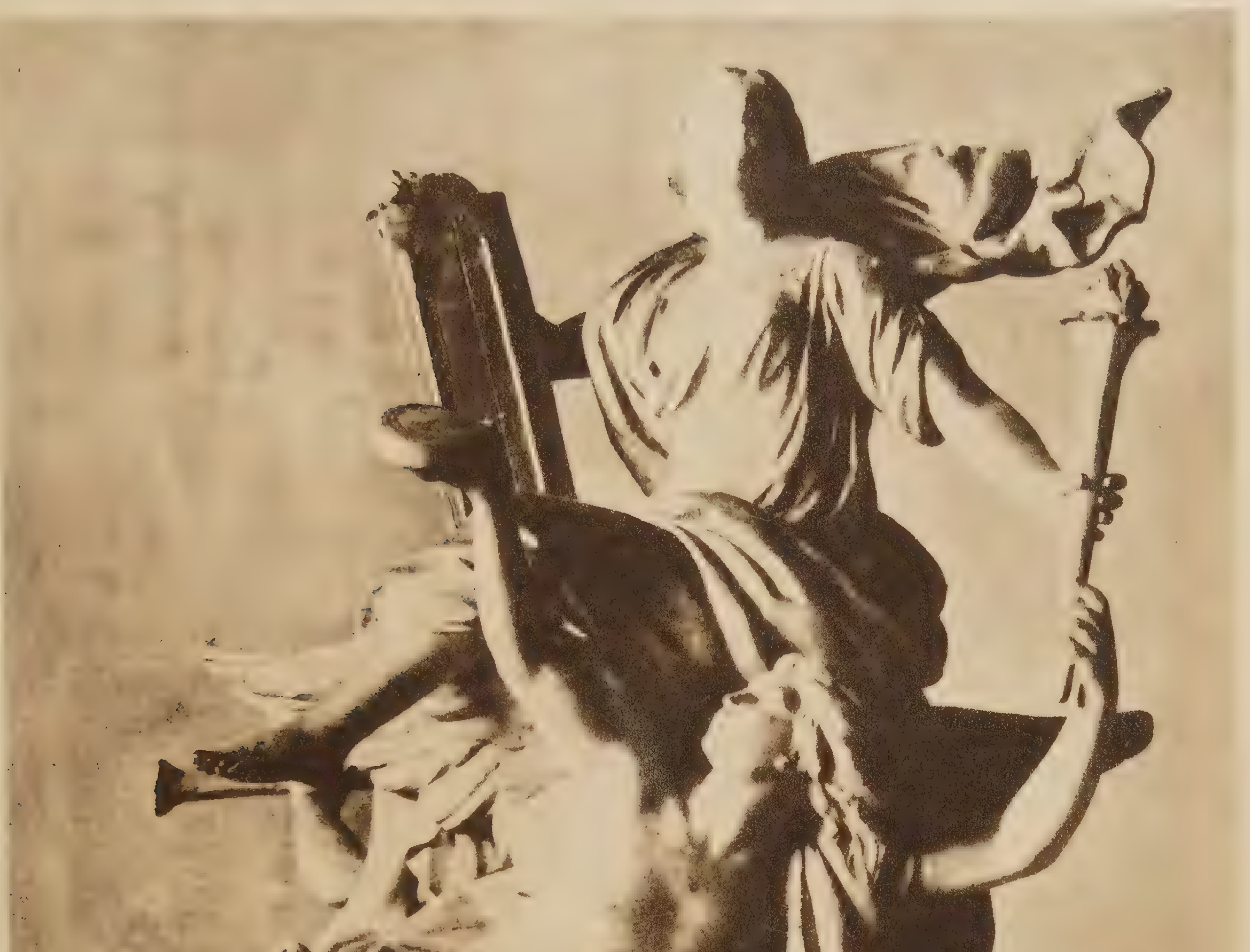
Franklin's prophetic vision foresees the future. He declares the events then taking place in the air to be a "Discovery of Great Importance, and what may possibly give a new Turn to Human Affairs."

Franklin further states that "Convincing Sovereigns of the Folly of Wars, may perhaps be one Effect of it . . . Five Thousand Balloons, capable of raising two Men each, would not cost more than Five Ships of the Line."

"And Where," he warns, "is the Prince who can afford to so cover his Country with Troops for its Defense, as that Ten Thousand Men descending from the Clouds, might not in many Places do an infinite deal of Mischief, before a Force could be brought together to repel them?"

The facsimile letter is preserved by W. K. Bixby of St. Louis, Missouri, on paper made at the original Montgolfier mills at Annonay, France.

MONUMENT *to the* CONQUERORS *of the* AIR—*Paris* 1783



MONUMENT designed in honor of Dr. Charles and the brothers Robert. Original is a Maquette in Sevres-ware in the Musee Nationale de la Manufacture in Sevres, France.

ITALIAN *Makes First* PUBLIC *Experiment in* LONDON—1783

COUNT FRANCESCO ZAMBECCARI, Italian Adventurer, studied sciences and mathematics at Parma. He sent up the First Miniature Balloon in England (November 4, 1783).

PART VII

WORLD'S SCIENTISTS *Enter* ARENA *of the* FUTURE

GOVERNMENTS *Foresee Its* GREAT PORTENT *and* RIVALRY BEGINS

WE have discovered it! What are we going to do with it? This is the problem that challenges the scientists and creates anxiety among the nations of Europe (1783–84). "It is the most dangerous discovery of the ages," state the diplomatists. "It is capable of development into the greatest benefaction for mankind," insist the scientists. "How can we get it under control? With what power can we propel it?"

Every nation begins to work in secret—for in it they see either their own doom or the extension of Empire. George III, of England, commands Argand, the scientist, to appear before him and demonstrate the new science of aerostatation (November 26, 1783). Zambeccari, an Italian in London, sends up the first public experimental balloon in England on the preceding day (November 25, 1783). With the discovery of hydrogen, Biaggini and Dinwiddie begin their experiments with "Aerostatick Globes" and "Flying Chariots" (November 1783).

Martyn comes forward with his "Aerostatic Globe" (November 1783). Charles and Robert again arouse France with the First Ascents with Hydrogen (December 1, 1783). Hutton experiments with air pressure on plane surfaces (December 1783). The largest balloon of its kind ever built—23,000 cubic metres—*La Flesselle* makes its ascent in Lyons (January 19, 1784) with Montgolfier, De Rozier, and five passengers. Sadler sends up his first experimental balloon at Oxford (February 9, 1784).

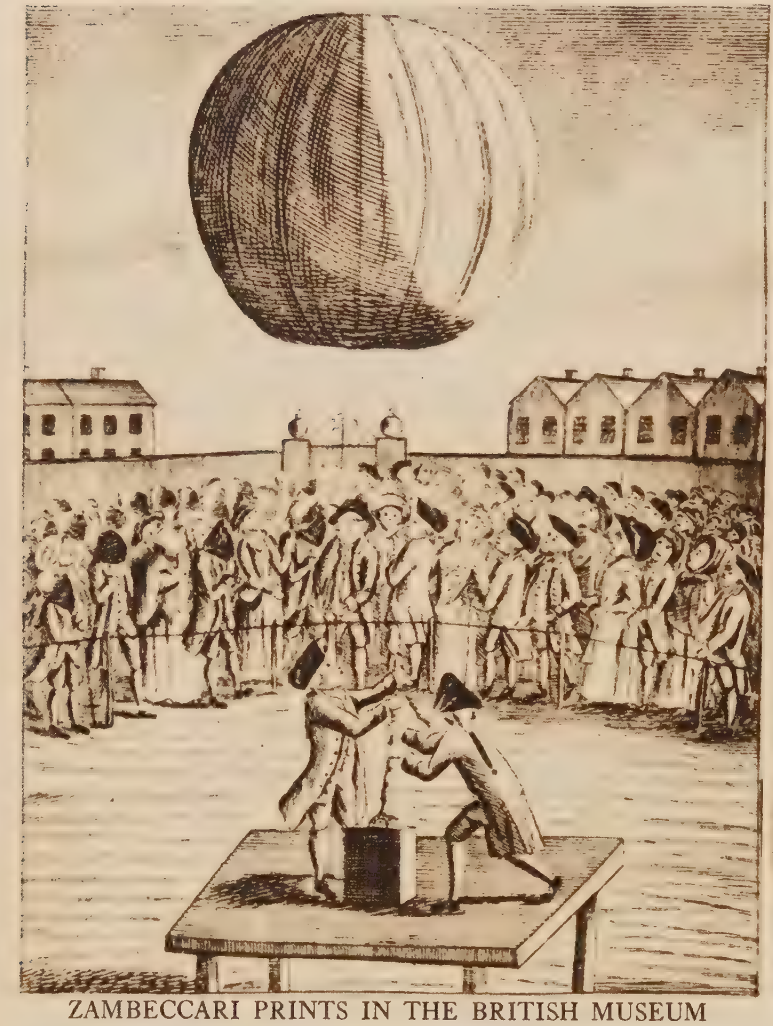
Holland, Belgium, Germany, Italy, Austria set their scientists at work in the laboratory (1784). The first experimental balloon crosses the Channel (February 22, 1784). The first balloon ascent in Italy is made by Andreani at Milan (February 25, 1784). Blanchard makes his first ascent in Paris in his "Vaisseau Volant" with wings and rudder to control its direction (March 2, 1784).

The first woman to "go up in a balloon" is Mme. Thible (June 1784) in "Le Gustave" named in honor of King Gustave of Sweden, who witnesses the ascent at Lyons. The famous "Aerostat de Dijon," with prow, rudder and wings, by De Morveau, makes its test flight (June 12, 1784). The first attempt of a Dirigible Montgolfier, with large fan-shaped rudder, propelled by escaping jets of hot air, is made by Miollan and Janinet at Luxembourg Gardens (July 11, 1784).

Meusnier (July 1784) introduces the first navigable balloon with a screw-propeller—"a project destined in due time to solve the problem of the Dirigible Airship of today." The first Cylindrical Balloon, with propulsion by silk oars, ascends with the Robert brothers at St. Cloud (July 15, 1784).

The press is divided: One group declares it "infinitely the most magnificent and most astonishing discovery . . . perhaps since creation." The cynics attempt to "laugh this new folly out of practice as soon as possible." Others remark that "the employment in the meantime is more innocent than cutting each other's throats for absurd trifles by Sea and Land." While the orthodox declare it to be "immoral." "If Providence decreed that man should fly, He would have provided him with natural means."

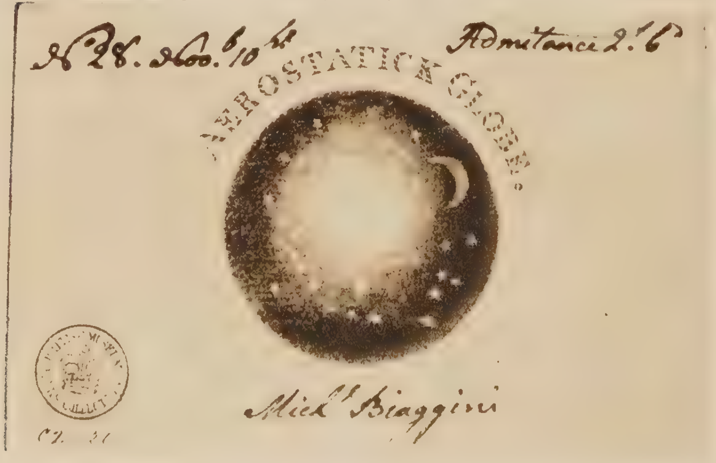
FIRST *Miniature* BALLOON *Sent* UP *In* ENGLAND—1783



ZAMBECCARI PRINTS IN THE BRITISH MUSEUM

First Public Balloon in England at the Artillery Ground in Moorfield (November 25, 1783) by Zambeccari. Seen by "a vast number of people," it was found 2½ hours later 48 miles away in Sussex by a farmer who exhibited it in his barn at "one penny a head."

That this "Ascension" was under the management of Biaggini is evidenced by the ticket (below) now in the Banks Collection.



No 28. Nov. 10th Admitance 2/6

AEROSTATICK GLOBE.

Mich.l Biaggini

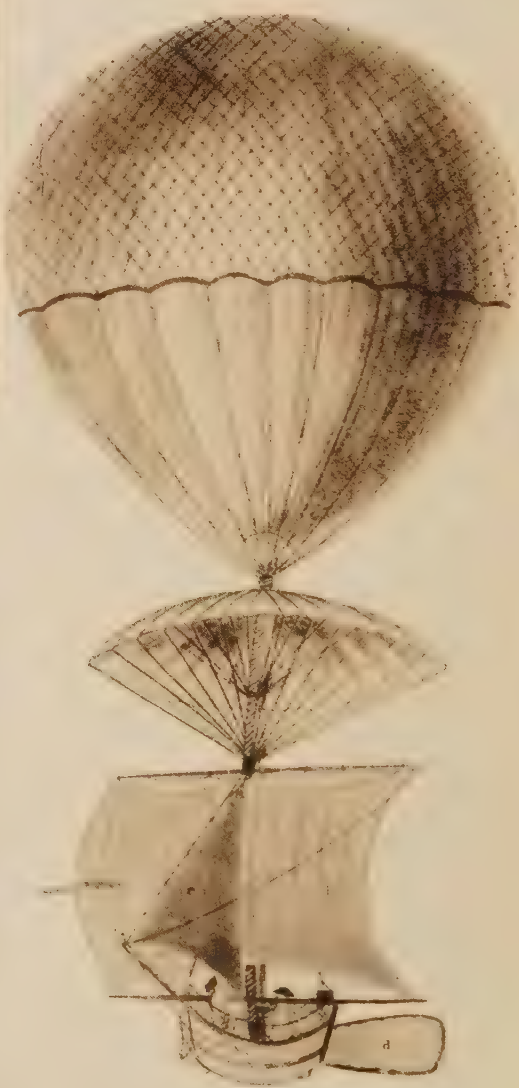
ENGLAND, as we shall see in the next chapter, followed France in the newly discovered Science. Count Francesco Zambeccari was an Italian "sailor of fortune." Michael Biaggini was a maker of artificial flowers.

Zambeccari was born in Bologna (1752). He had been an adventurer with the Spanish along the coast of America and in the conflicts with the Moors, but during the Inquisition had fled to Paris—and then to England.

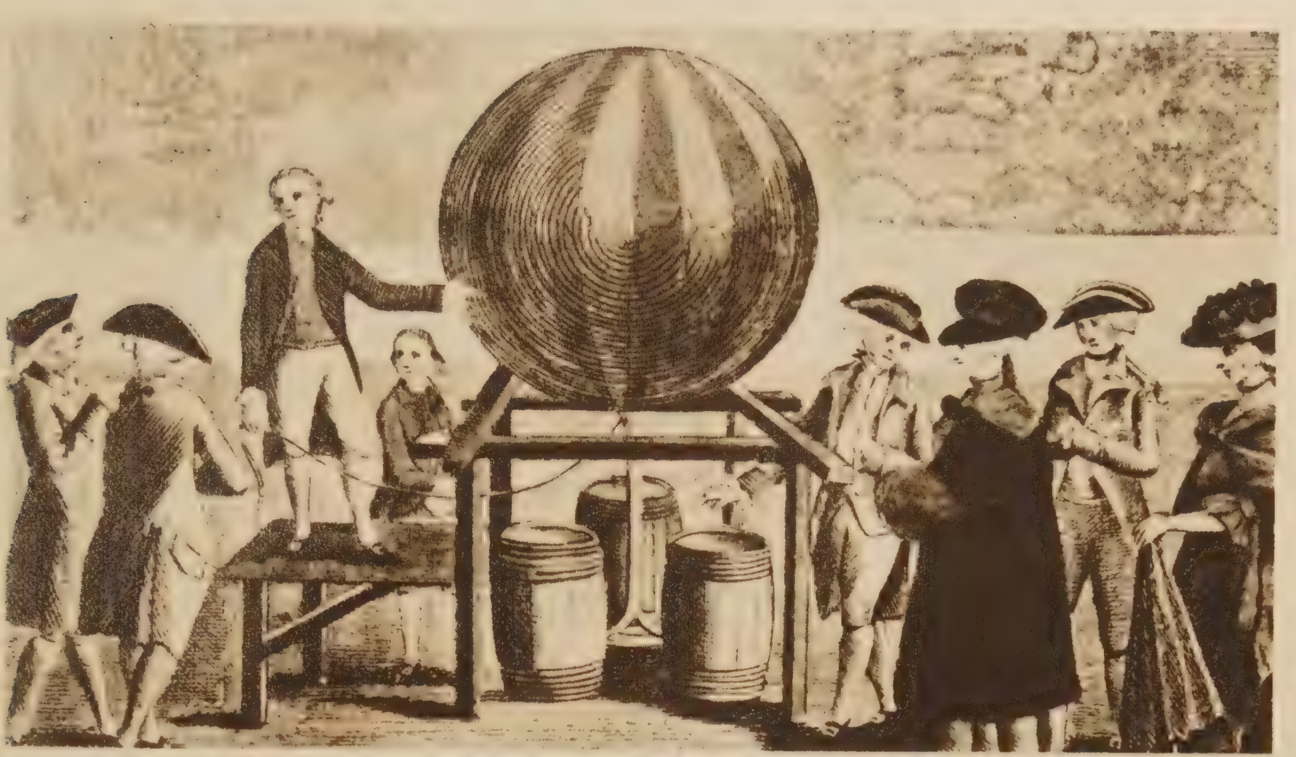
With Biaggini, a fellow-countryman living at Cheapside, he made this "Aerostatic Globe" (left), a small affair only five feet in diameter (November 4, 1783).

MARTYN'S "AEROSTATIC GLOBE"

Thomas Martyn presented this design (below) to "His Royal Highness the Prince of Wales" (November, 1783). Note the sails, oars and rudder.

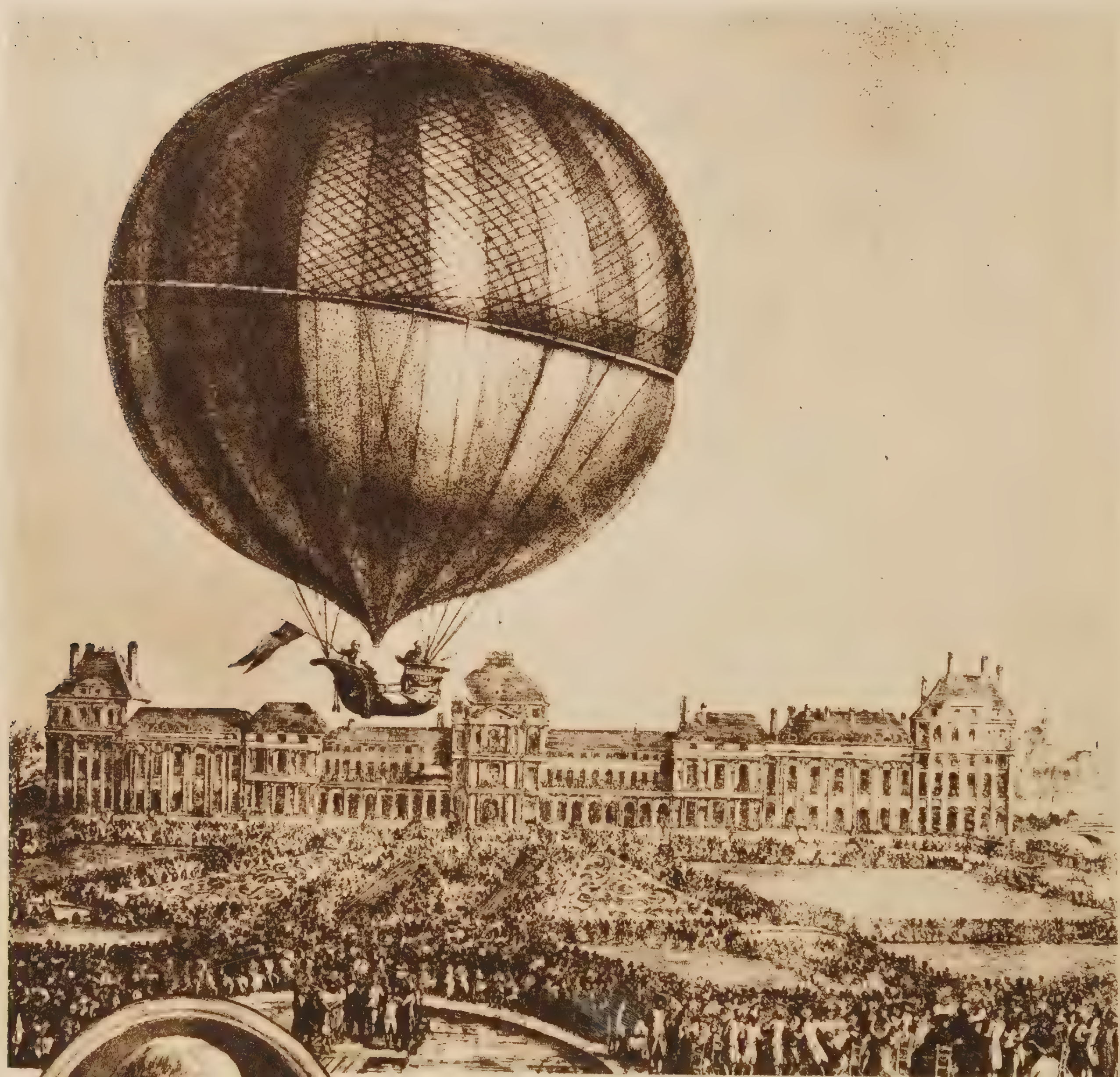


SCIENTIST *Before* GEORGE III *at* WINDSOR *Castle*—1783



PRINTS FROM THE CUTHBERT COLLECTION IN LONDON—The Swiss Scientist, Aime Argand, demonstrating the "New Science" before King George III and the Royal Family (November 26, 1783). "The King toyed with the 30-inch Balloon at the end of a string, letting it rise to the Queen and Princesses at an upper window. When the cord was cut, he watched it for ten minutes until it disappeared from sight."

Aeronautic SCIENTIST *at* COURT *of* LOUIS XVI—1783



HUGE CROWDS AT TUILERIES GARDENS WITNESS THE CHARLES ASCENT

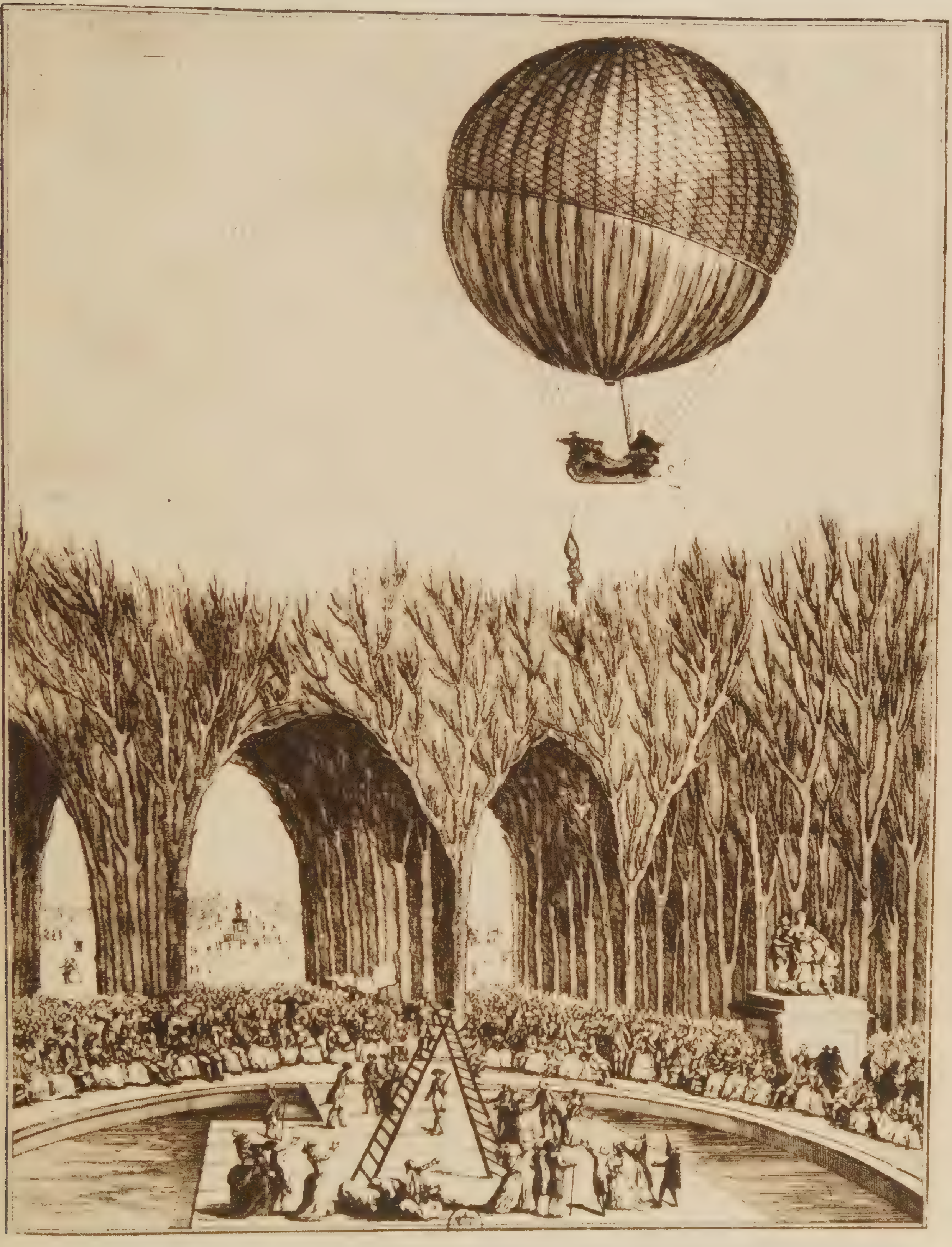
THIS EXPLOIT (December 1, 1783) created a "tremendous sensation." Huge throngs gathered at the Tuileries Gardens in Paris as Jacques A. C. Charles, scientist, with the elder Robert, constructor, rose into the air. They landed two hours later, twenty-seven miles from Paris.

Charles then re-ascended alone. He rose rapidly to over 9,000 feet. This "alarming experience, it is said, restrained this distinguished pioneer from ever making another flight."

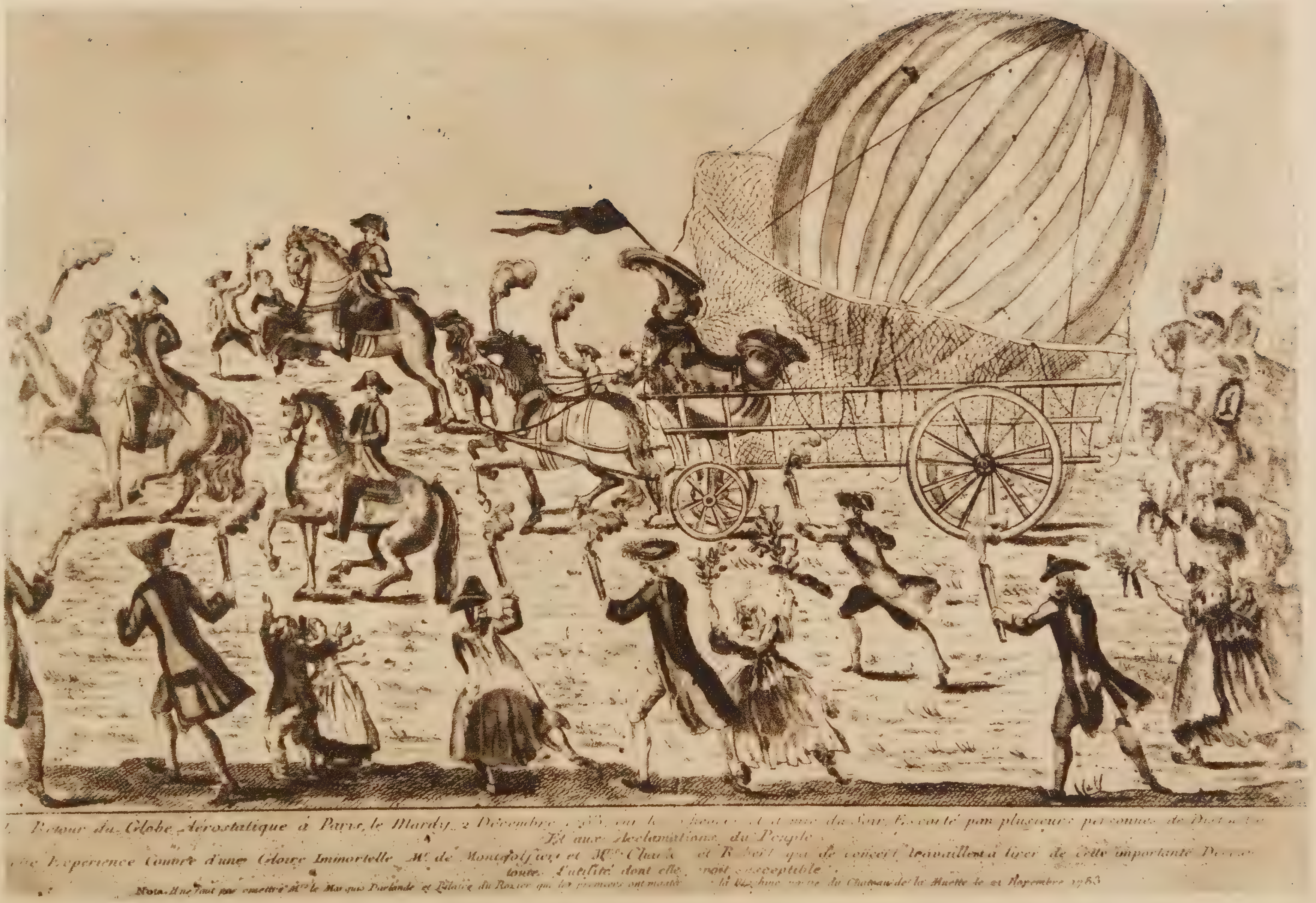
This event is the first forward step in Aeronautical Science. The Robert brothers and Professor Charles here developed the invention of Montgolfier to its next progressive state. They introduced not only gas, but also use of the barometer, the suspension of the car, the necessity of ballast, the valve and the net—all of which are in use today.

Prints in Collection of the Bibliotheque Nationale in Paris.

ROYAL COURT *at the* TUILERIES *Palace*—PARIS, 1783

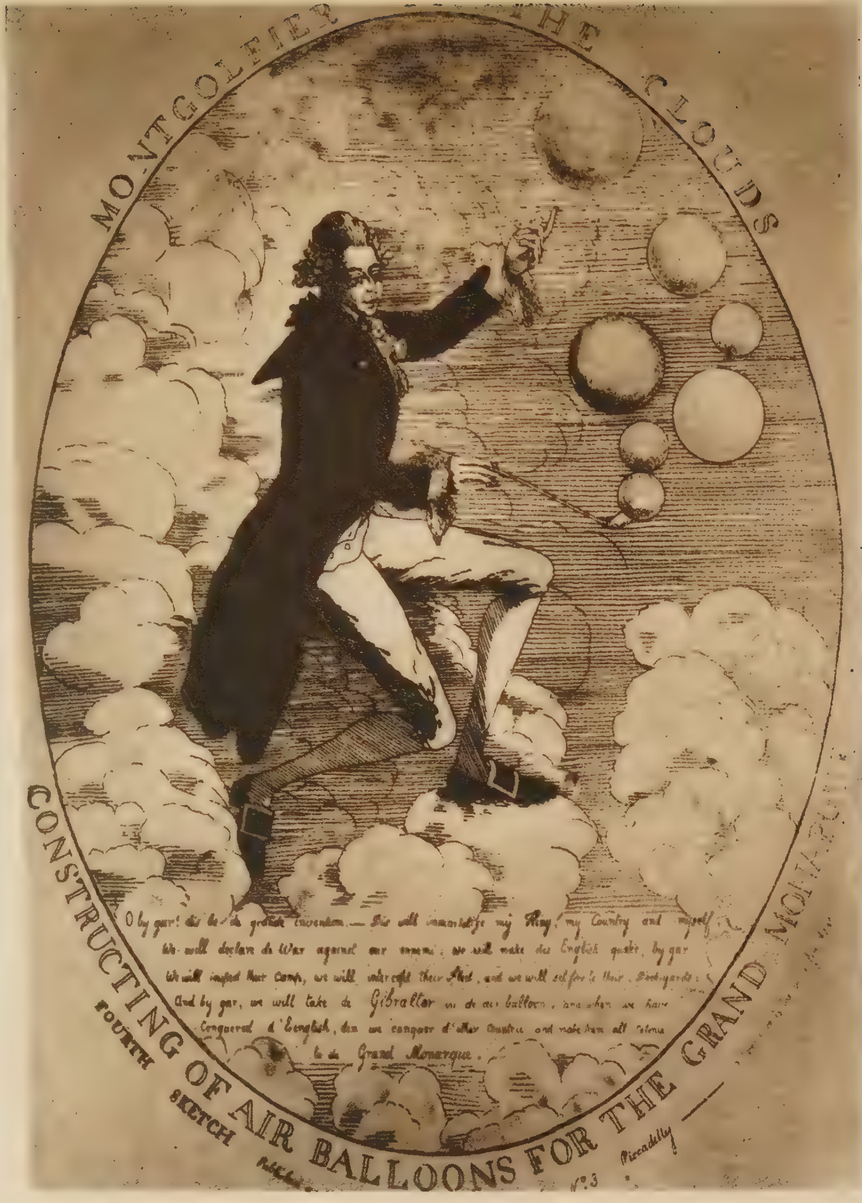


PROFESSOR CHARLES AND M. ROBERT GIVEN "GREAT OVATION BY THE MULTITUDE"
Distinguished personages gather (December 1, 1783) with "wild demonstration to pay tribute."

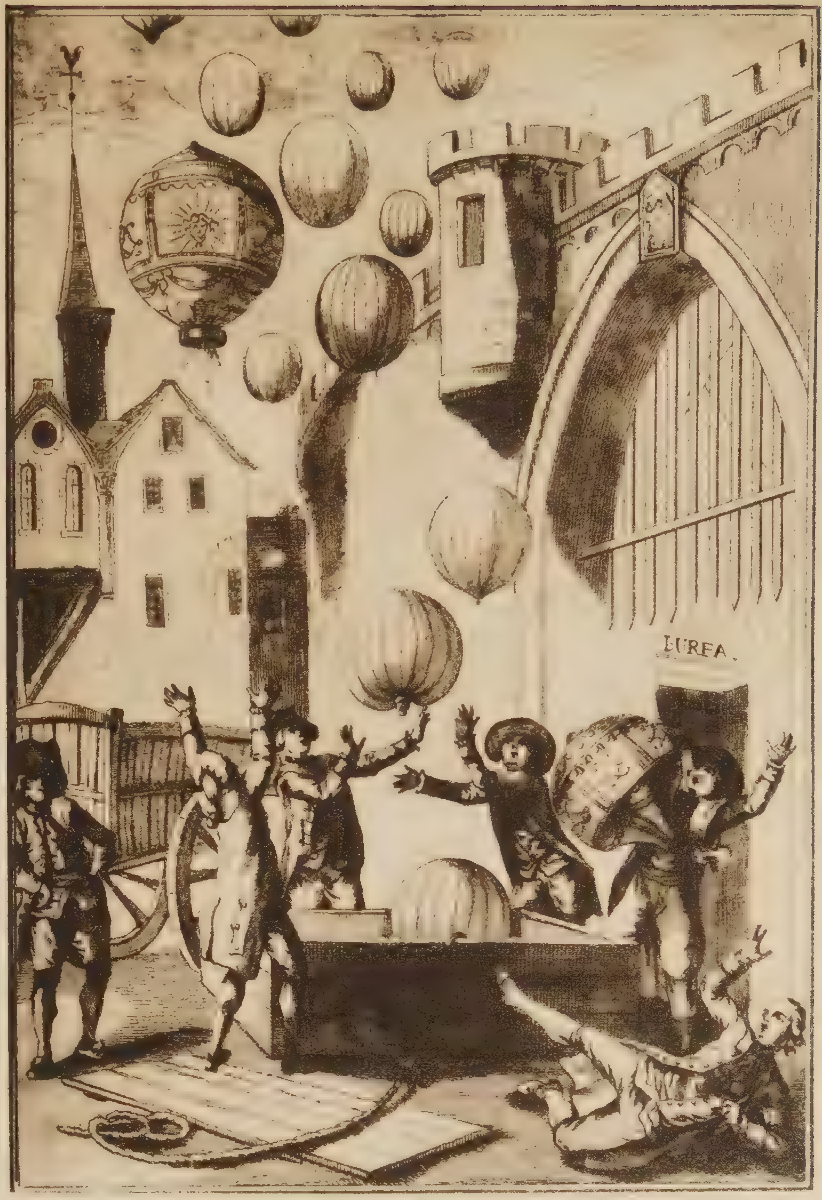


Retour du Globe Aérostatique à Paris, le Mardy, 2 Décembre [illegible] du Soir, Escorté par plusieurs personnes de Distinction
Et aux Acclamations du Peuple.
[illegible] Expérience Couverte d'une Gloire Immortelle M.rs de Montgolfier et M.rs Charles et Robert qui de concert travaillent à tirer de cette importante Découverte toute l'utilité dont elle [illegible] susceptible.
Nota. Il ne faut pas omettre M.rs le Marquis Darlande et Pilatre du Rozier qui les premiers ont monté [illegible] la Machine [illegible] du Chateau de la Muette le 21 Novembre 1783

"TRIUMPHANT RETURN" OF PROFESSOR CHARLES AND M. ROBERT INTO PARIS AFTER "RECORD BREAKING" JOURNEY
Cartoon in the Collection of Harry Guggenheim, American Ambassador to Cuba—Commemorating the Historic "Home-Coming" (December 2, 1783.)

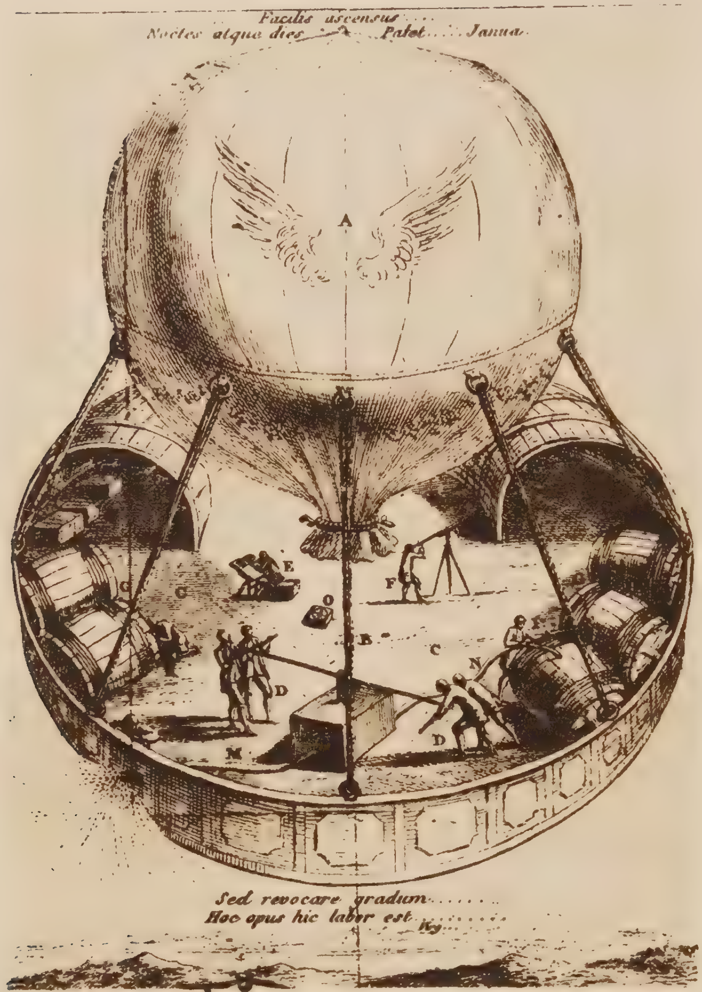

MONTGOLFIER IN THE CLOUDS
CONSTRUCTING OF AIR BALLOONS FOR THE GRAND MONARQUE
FOURTH SKETCH
O by gar! dis be de grande invention.— Dis will immortalize my King, my Country and myself.
We will declare de War against our enemi; we will make des English quake, by gar
We will inspect their Camp, we will intercept their Fleet, and we will set fire to their Dockyards:
And by gar, we will take de Gibraltar in de air balloon, and when we have
Conquered d'English, den we conquer d'other Countries and make them all Colonies
to de Grand Monarque.
Piccadilly
No. 3

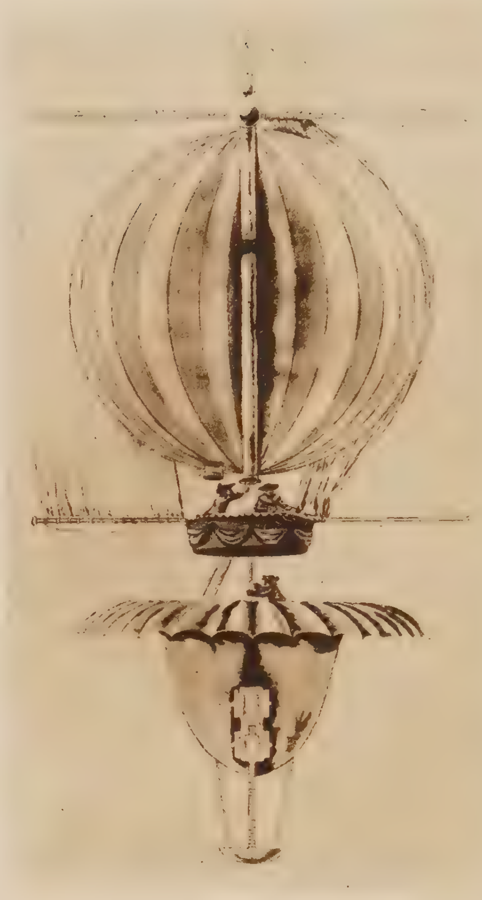
"BALLOON CRAZE" STRIKES CARTOONISTS IN PARIS
Montgolfier is depicted in the Clouds (1783) with his "Fleet of Balloons"

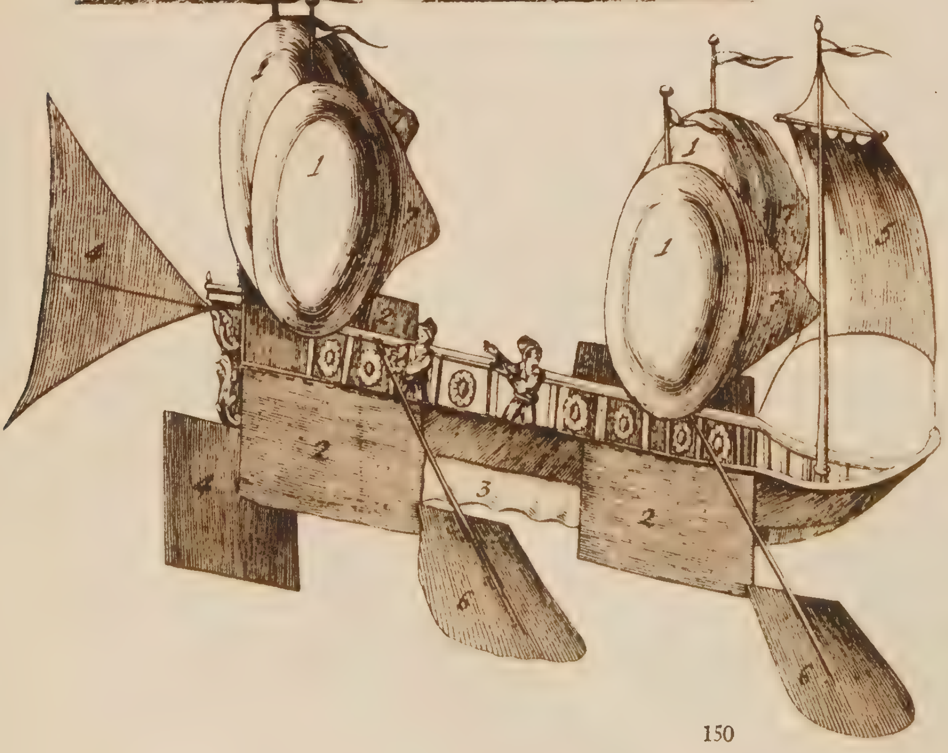


PUBLIC PRESS SEES VISION OF "WARS IN THE AIR"
Cartoon in the Harry Guggenheim Collection, from *Journal de France* (1783)

INVENTORS *Test* ORIGINAL PLANS *In* EUROPE—1783


Facilis ascensus ....
Noctes atque dies ... Patet .... Janua.
A
E
F
G
O
B
C
N
D
M
Sed revocare gradum ......
Hoc opus hic labor est ......





REVOLUTIONARY PLANS

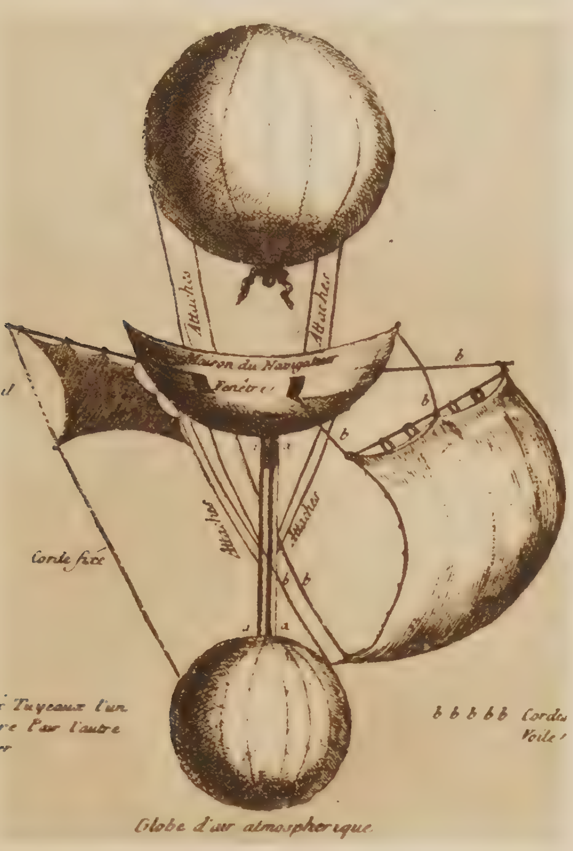
THE REVOLUTION of the Sciences is now predicted in France. We present three Plans that aroused agitation (1783).

A project of a "Voyage to Other Spheres" (upper left) appears in Paris, fostered by M. de Saint-Just. It is a huge ship with astronomical instruments for studying the solar system.

An anonymous design (above) is also found in Paris (1783) which suggests sails for "Vessels of the Air" and an apparatus for safe landing in storms or in strange countries.

In Madrid (1783) we find a Spanish project for a huge sailing vessel, "Nave Atmosferica" (below). It is the most ingenious of all the schemes up to this time, with its ship's hull, sails, rudder, oars and "Globos Aerostaticos."

FRANCE *Proposes* GLOBE VOLANT *and* FLYING BOAT—1783

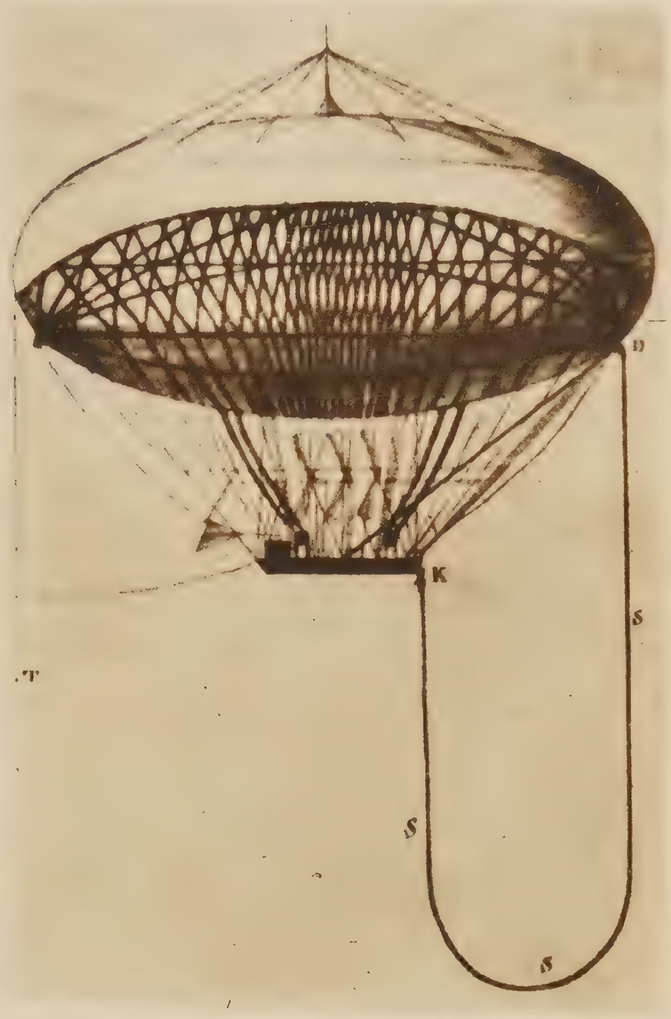


"MACHINE A LA NAVIGATION AERIENNE"

WE find in Paris (1783) this "Globe Volant." (above). It is another "marvelous contrivance for flying over Seas and Continents."

Inventors seem to have abandoned the bird principle of former centuries and are concentrating their genius on seamanship, applying to the air the laws established on the seas.

"The Balloon is but the crude beginning" is the consensus of the scientists throughout the nations of Europe. Montgolfier with his "Lighter-than-Air," sets human ingenuity to work for centuries.



MEUSNIER'S AIRSHIP WITH SCREW PROPELLER

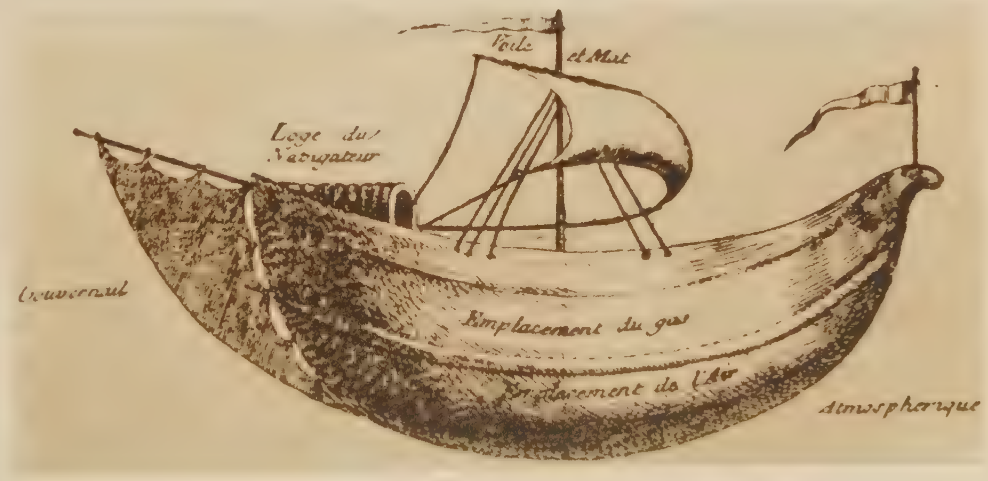
General Jean-Baptiste-Marie Meusnier, "one of the great scientists of his time" (Paris, 1783), gave to the world this design of a great "Ellipsoidal Airship" to be 260 feet long and "screw-propelled."

FLYING BOAT

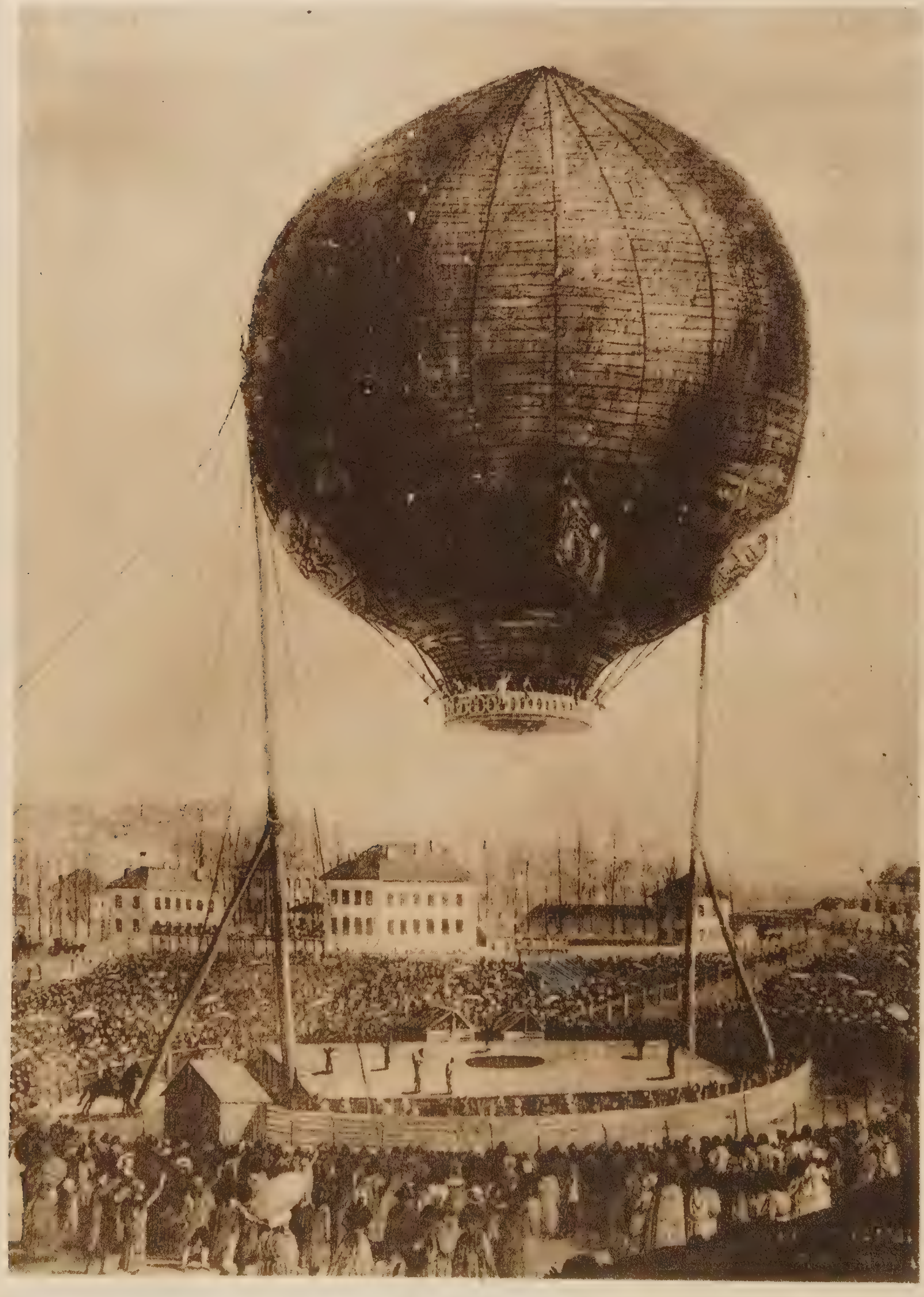
Here is another French conception of a boat that can sail both the seas and the air (1783).

Held on the air waves by gas, this boat is proposed to race through the clouds like a sailing vessel before a strong gale.

These prints are deposited in the Bibliotheque Nationale in Paris.

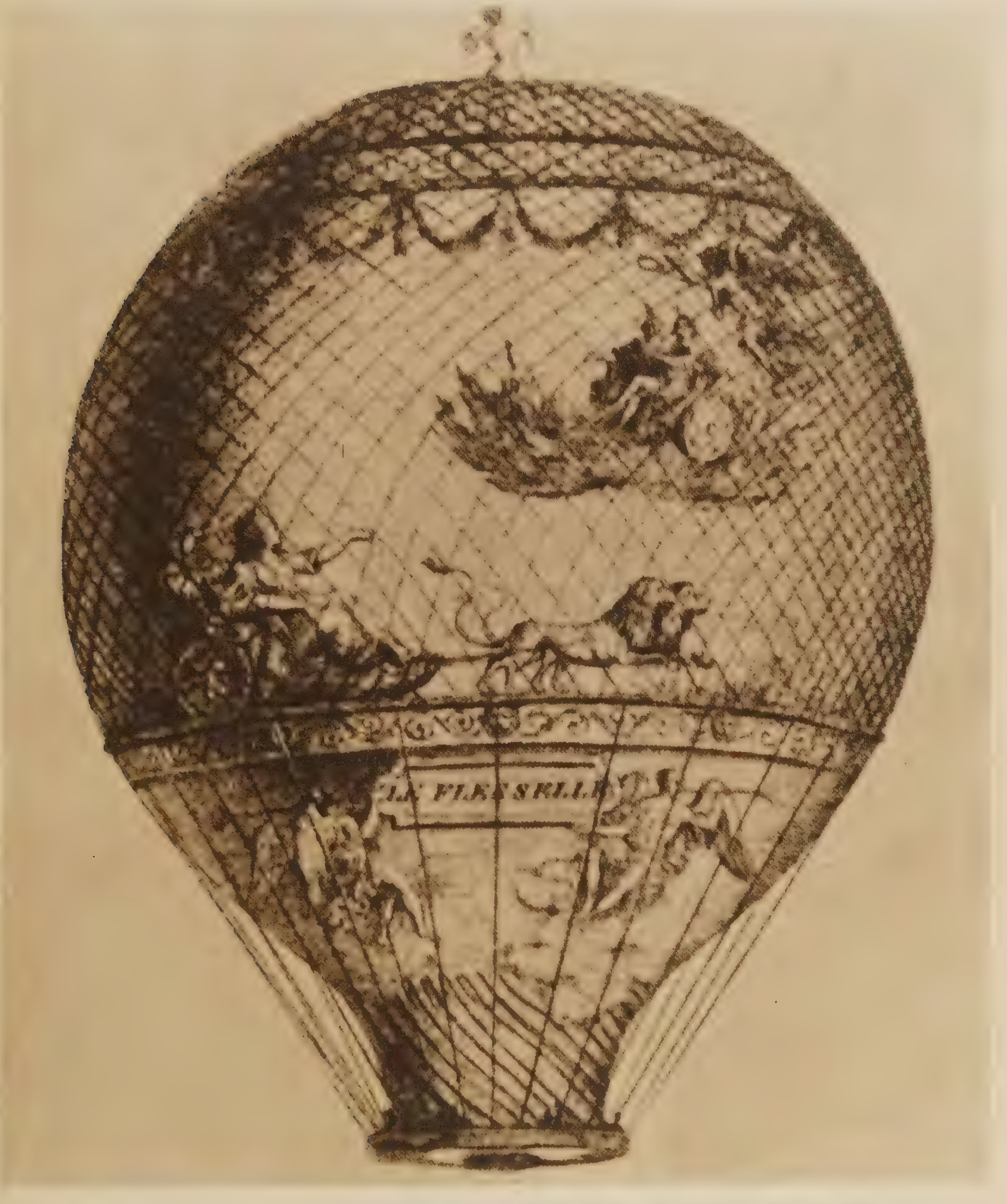


First VOYAGE *Through the* PROVINCES *of* FRANCE—1784



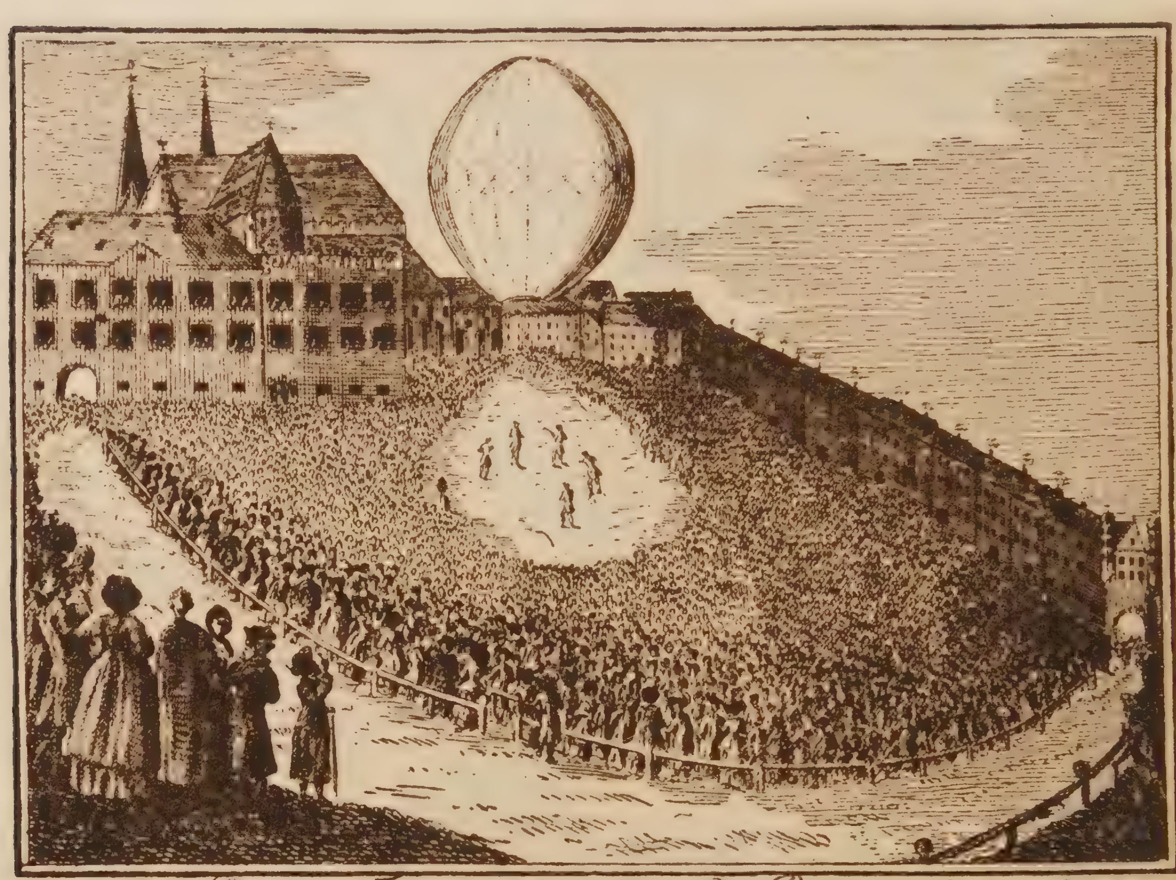
JOSEPH MONTGOLFIER MAKES HIS "FIRST, LAST AND ONLY ASCENT"—This notable event took place (January 19, 1783) at Lyons, France, just two months after the first ascent of human passengers. It is the famous hot-air "La Flesselle." It carried Joseph Montgolfier, inventor of the Balloon. De Rozier piloted it (the man who had made the first ascent in the world's history). With them were Prince Charles de Ligne, Count de Laurencin, Count de Dampierre, Count de Laporte, Count d'Anglefort, and A. Fontaine. This print is in the Tissandier Collection in Paris. (See opposite page.)

“LARGEST BALLOON *Ever Constructed in* FRANCE”—1784

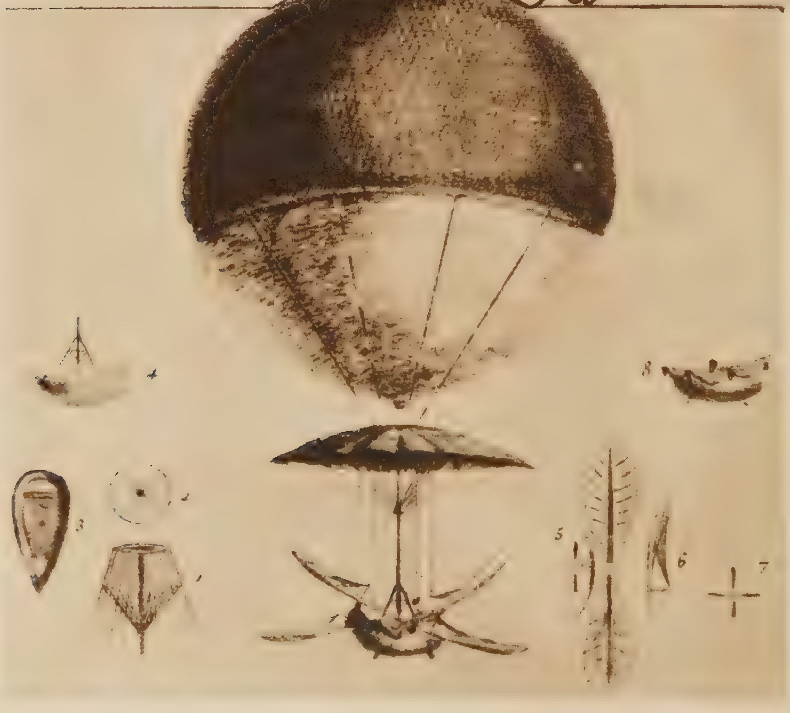


GIGANTIC AIRSHIP SAILS ON “AMAZING ADVENTURE IN CLOUDS”—“La Flesselle” (January 19, 1784) was 100 feet in diameter by 130 feet high. With its seven aerial sailors, it leaped into the clouds with a blast of martial music and booming of cannon. There were “shrieks of fear and thunders of applause.” Suddenly, the throng stood petrified. “La Flesselle” had burst 3,000 feet in the air! It was falling from the skies! As it reached the ground, seven men stepped out—unhurt, “save for a scratch by Montgolfier.”

FIRST ASCENT *Over* AUGSBURG *in* BAVARIA—1784



Anno 1784 Den 19 Febrz iſt in Augsburg, die Luft Ball. von 10 ſchuhe im durch=
meſſen und 11 ſchuhe in der Höche, von 2 Gebrüdern Bader von Ottobeyren in die Luft
gelaſſen worden.



"AUFSTIEG EINES LUFTBALLONS IN AUGSBURG"

Old Print from the Nurnberg Museum

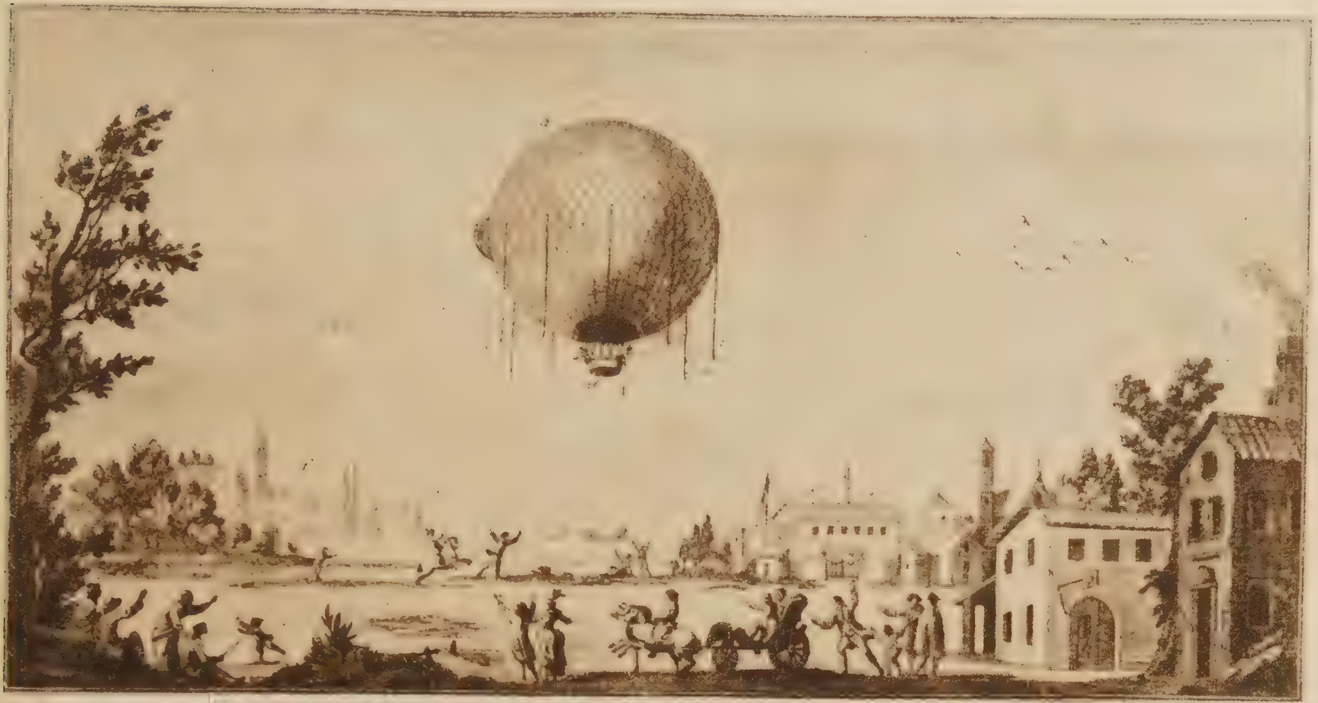
GERMANY now enters the Air with its first aerostatic experiments (February 19, 1784), which more than a century later are to send her to the foreranks in the New Age.

The first experimental hot-air Balloon was sent up at Ottobeuren by Ulrich Schiegg, a Benedictine monk. The Bader brothers, bookbinders, followed with the first "Montgolfiere" at Augsburg, as shown in the print (above).

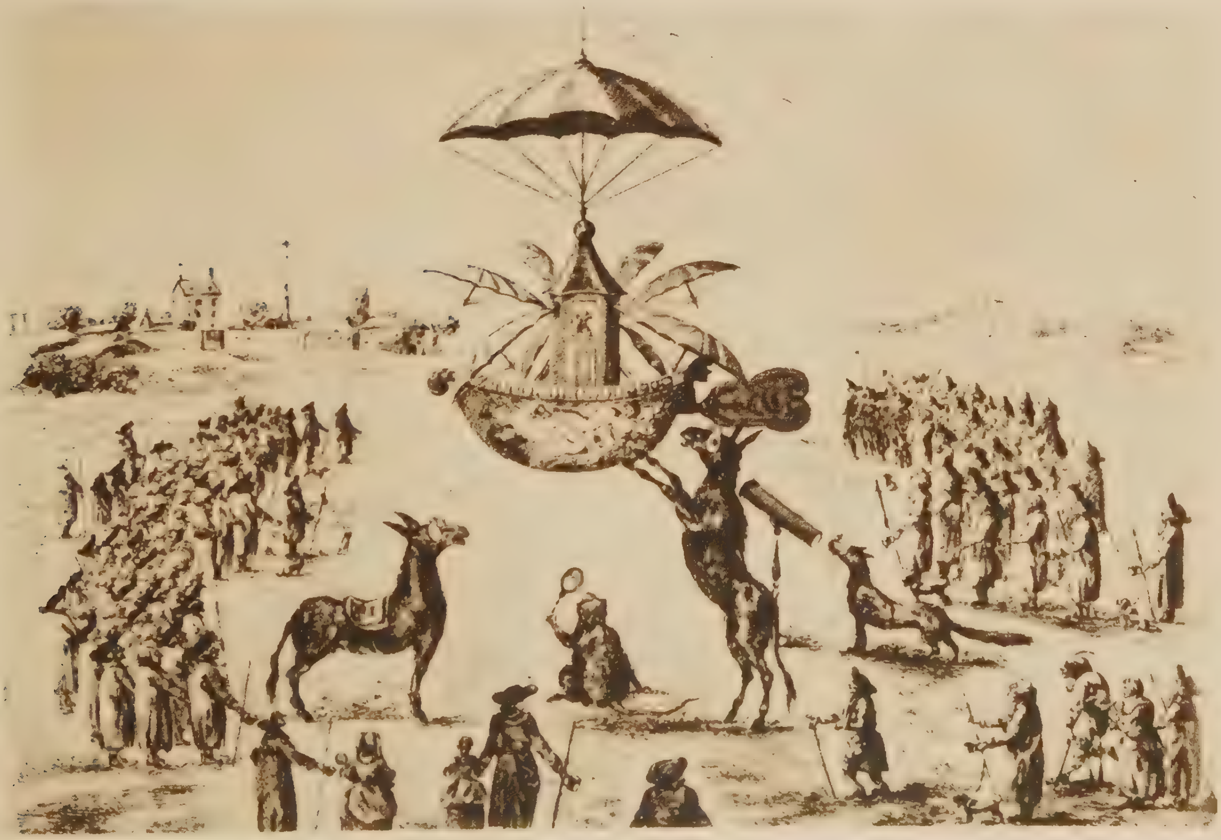
It remains for a Frenchman, Blanchard, to make the first ascent of a human being in Germany in the following year, as we shall observe later in these pages.

We shall meet J. P. Blanchard on many historic occasions. He is destined to become the "Greatest of the First Aeronauts." We find him first in France ascending from the Champ de Mars in the first attempt to steer a "Vaisseau Volant" (March 2, 1784). This print (left) is in Chalet Meudon.

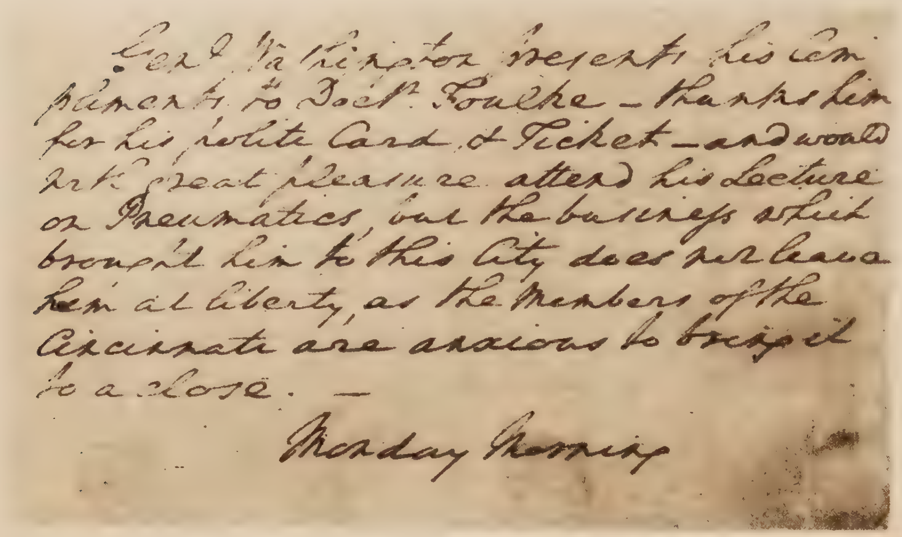
FIRST ASCENT *in* ITALY *at* MILAN *by Andreani*—1784



ITALY enters the arena (February 25 and March 13, 1784). Paolo Andreani makes the First Ascent at Milan in an "Improved Montgolfiere" constructed by the Gerli brothers. Later we shall see Zambeccari and Lunardi return to their native land to make ascensions at Rome, Naples, and Bologna. The print (above) is in possession of the Royal Aeronautical Society. We present (below) a caricature of Blanchard's "Flying Ship."



WASHINGTON *Expresses* HIS OPINION *in* AMERICA—1784



Gen.l Washington presents his Compliments to Doct.r Foulke — thanks him
for his polite Card & Ticket — and would
with great pleasure attend his Lecture
on Pneumatics, but the business which
brought him to this City does not leave
him at liberty, as the Members of the
Cincinnati are anxious to bring it
to a close. —

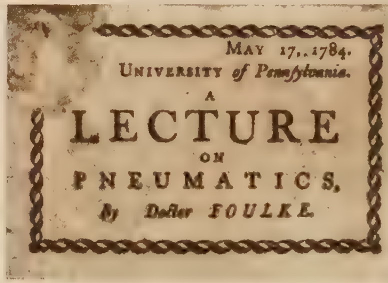
Monday Morning

THE First Balloon ever seen in America was brought from France and exhibited in Philadelphia (May 17, 1784) by Dr. Foulke, when he delivered the first lecture on "Pneumatics" in the Western Hemisphere.

We present a facsimile letter from George Washington to Dr. Foulke (left) which is in the possession of the University of Pennsylvania.

Washington, as has been recorded, had been informed of the "New Invention" by Benjamin Franklin, who witnessed the first ascension in France.

"The Father of His Country" was at Mount Vernon.



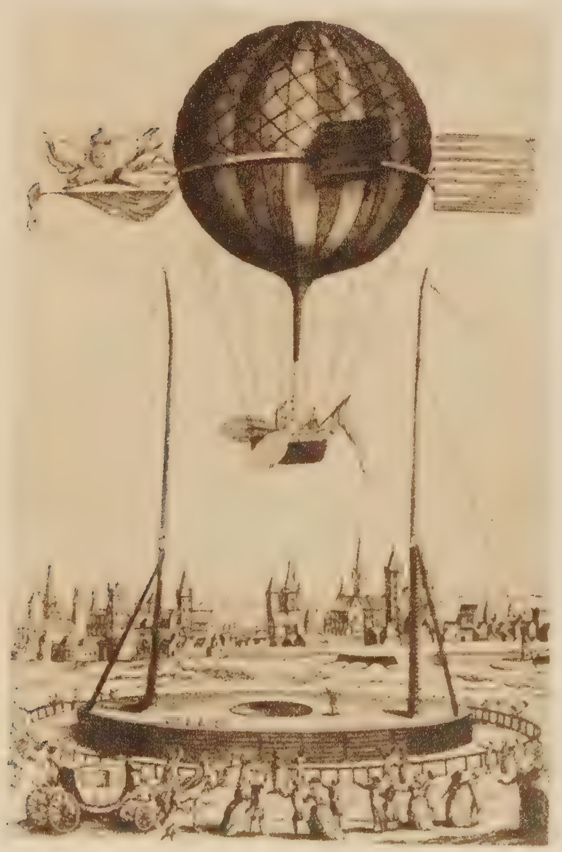
MAY 17,.1784.
UNIVERSITY *of Pennsylvania.*
A
LECTURE
ON
PNEUMATICS,
By Doctor FOULKE.

L'AEROSTAT DE DIJON, WITH WINGS FOR PROPULSION

Historic Print (below) in the Bibliothetique Nationale in Paris

FRANCE continued its leadership in the Air, with scientific organization. L. B. Guyton de Morveau, distinguished physicist, conducted experiments for the Academy of Dijon, which offered the First Prize for "New Discoveries," with more than one hundred competitors.

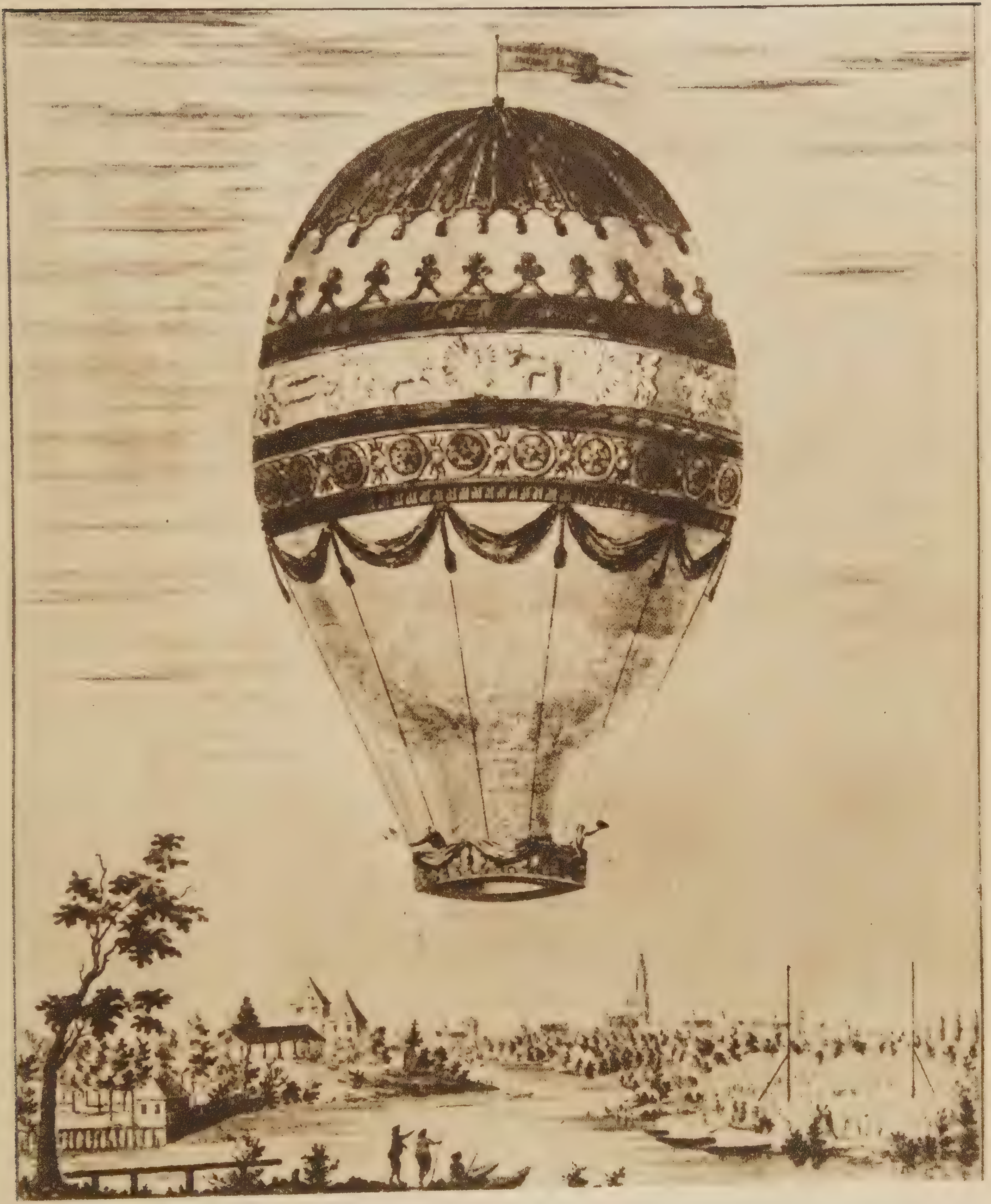
Professor Morveau made his trials (April 25, 1784). He proposed using the ascensive power of the Balloon to "draw water from mines." He suggested the First Dirigibles and construction of Metal Balloons.



CARTOON IN ENGLAND AND FRANCE (1784)

Original in British Museum reveals its own plot (below)

FIRST ASCENT *in* STRASBOURG *on the* RHINE—1784



THE political storm was soon to cost Louis XVI his throne and bring on the French Revolution—but France was still "Balloon Mad." This old print in the Bibliotheque Nationale in Paris, shows the First Ascent in Strasbourg, in Eastern France, (May 15, 1784) about the time of the first daily newspaper in America.

FIRST WOMAN IN THE WORLD TO ASCEND IN A BALLOON

(Historic print in Collection of Lt. Col. Lockwood Marsh, O. B. E.)

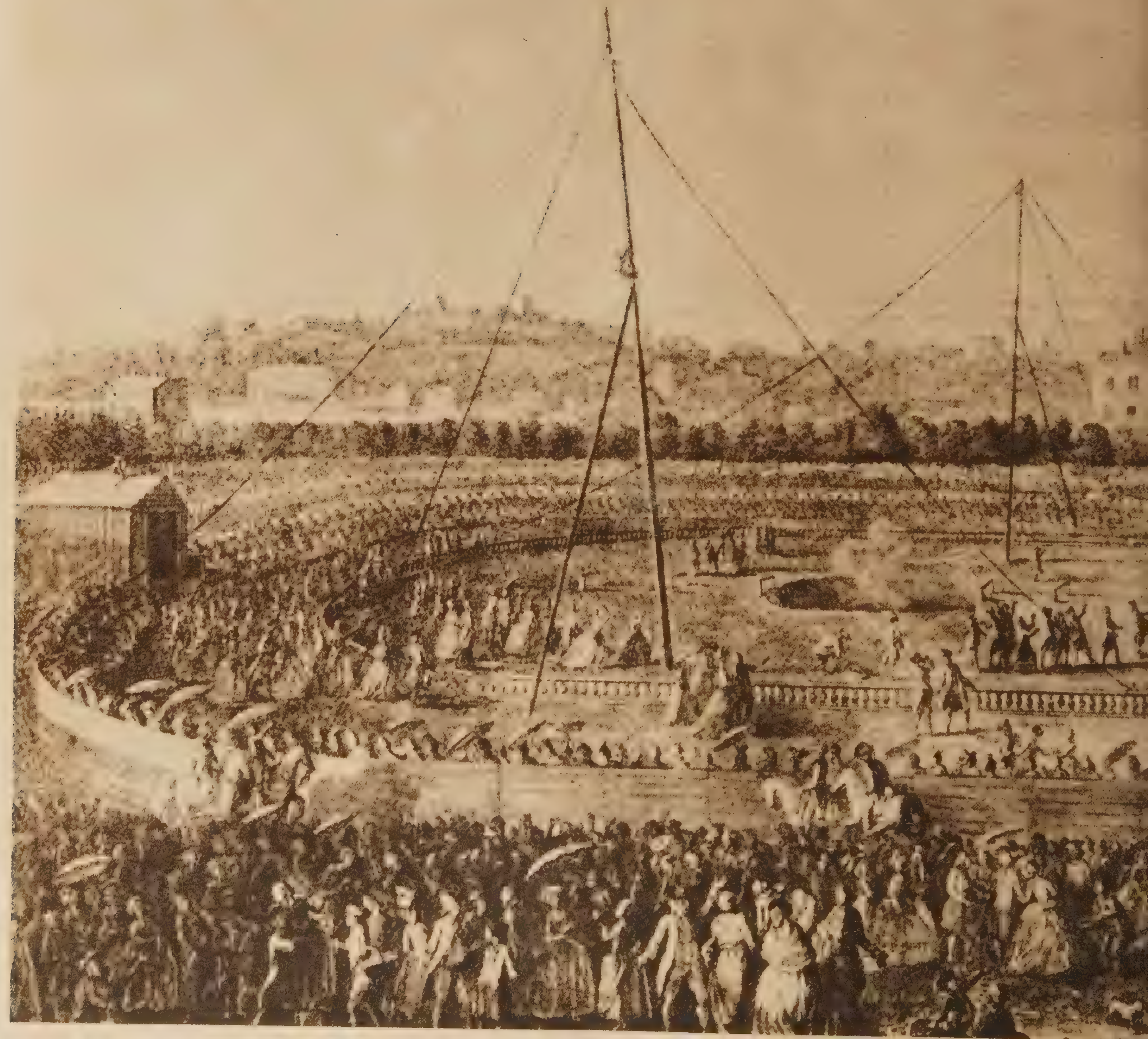
THIS HONOR belongs (June 4, 1784) to Madame Thible, a prima donna of note in France. She is described as having had a most charming personality.

Comte de Laurencin constructed at Lyons the great hot air balloon "Le Gustave," named in honor of Gustave III of Sweden, who took a profound interest in aerostation.

The Inaugural Ascension of "Le Gustave" was made by Count de Laurencin, with Madame Thible as his passenger. Among the immense throng in the public park of Lyons were many notables, including King Gustave, who bade Madame Thible "*Bon Voyage!*"

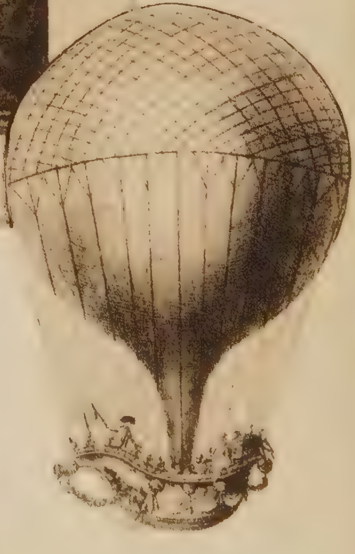
The great balloon rose rapidly, while the lady sang an operatic selection. It reached a height of 9,000 feet, remaining in the air three-quarters of an hour, landing safely some miles away.

Thus Madame Thible is not only the "First Woman to Make a Balloon Voyage," but also the first person to broadcast a musical selection from the air.



ETCHING
of
Mlle. ADELAIDE
MONTGOLFIER
By
JEAN
AUGUSTE
DOMINIQUE
INGRES

In the
Collection
of
Bella C.
LANDAUER
in
New York

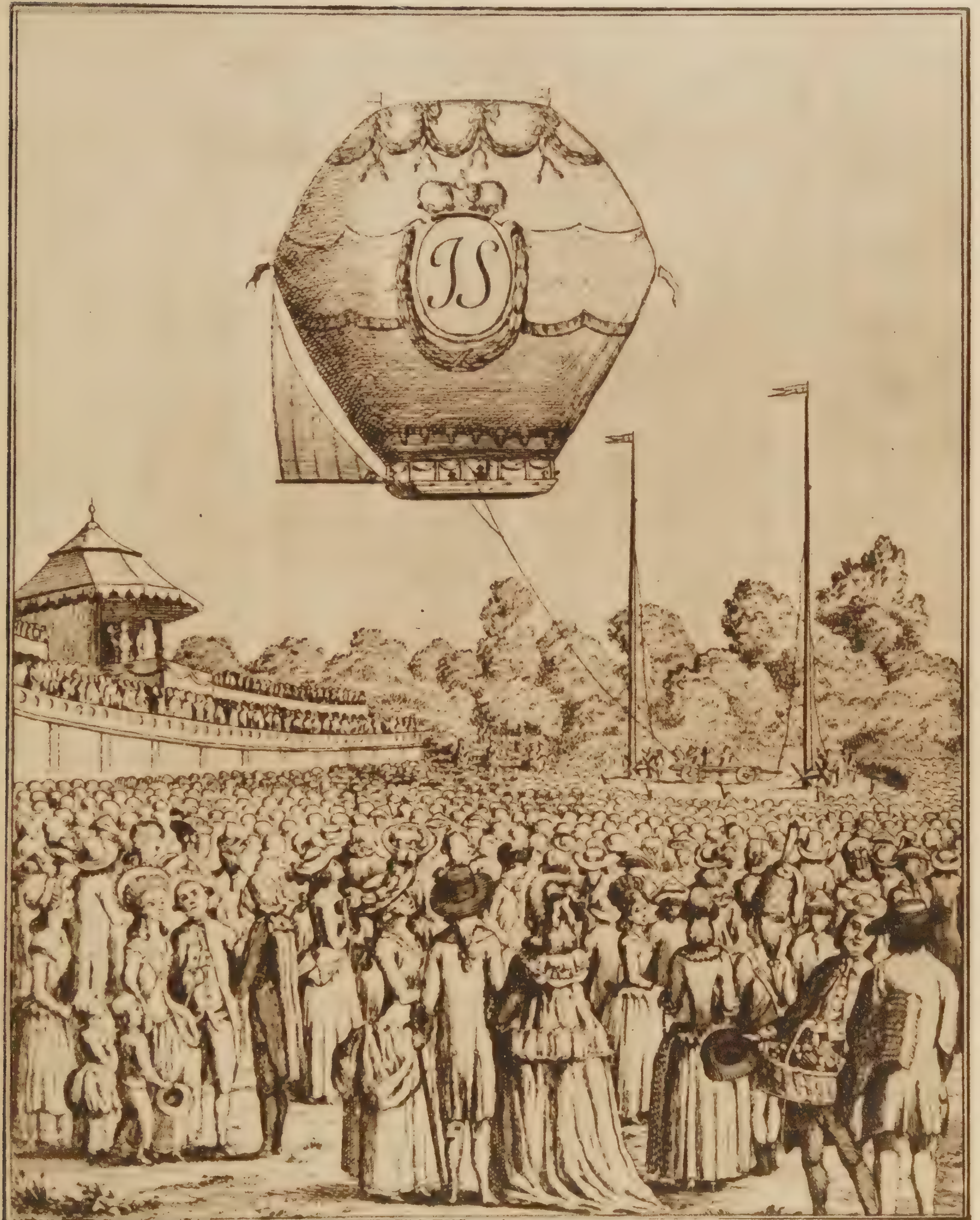


THE "GREAT LADIES OF FRANCE" were now the hostesses of the Famous Aeronauts (1784). Among the most famous of the jeune filles in these epochal days was the beautiful Mademoiselle Montgolfier (above), of the family of "Inventors of the Balloon." Her exquisite grace, as etched by Ingres some years later, exceeds that even of Marie Antoinette and the beauties in the French Court.

Scientists also gave the "New Discovery" social prestige. M. Coustarde de Massi and Professor Moucheto of Nantes College, like the members of the Dijon Academy of Sciences, pursued investigations.

Heading a syndicate, they built the famous "Le Suffren" (right), designed and constructed by l'Eveque, a marine engineer of Nantes. It made a successful ascension from the grounds of the Foundling Hospital at Nantes (June 14, 1784).

FIRST ASCENT *from* VIENNA *Hailed by* AUSTRIANS—1784



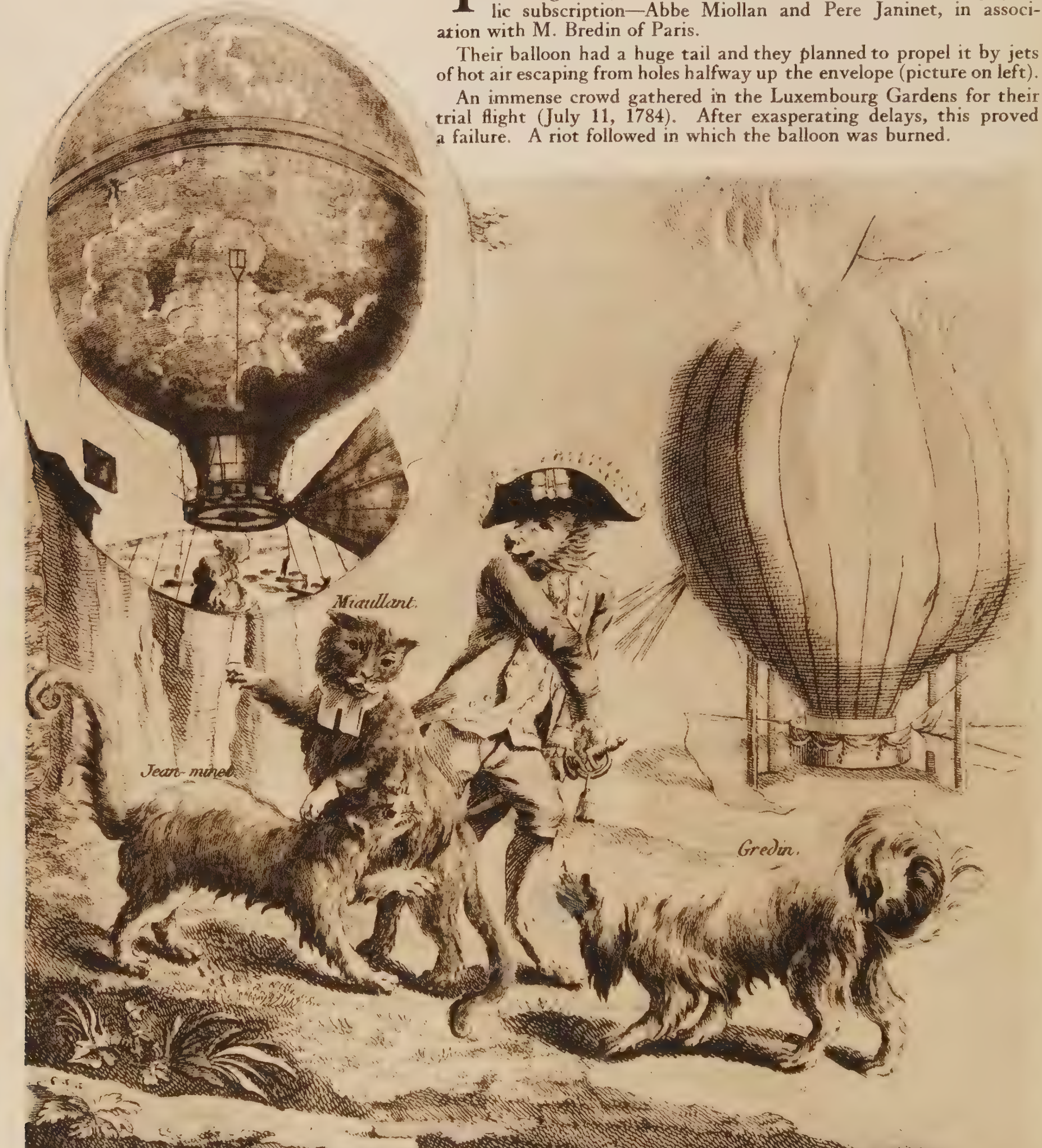
VAST THRONGS witness the First Balloon Ascension in Austria by J. G. Stuwer in Vienna (July 7, 1784)
—This historic print is in the Dollfus Collection in Paris.

FRENCH PRIESTS *Make Attempt to* SOLVE PROBLEM—1784

TWO FRENCH PRIESTS were first to attempt a dirigible "Montgolfiere," or hot air balloon, which was built by public subscription—Abbe Miollan and Pere Janinet, in association with M. Bredin of Paris.

Their balloon had a huge tail and they planned to propel it by jets of hot air escaping from holes halfway up the envelope (picture on left).

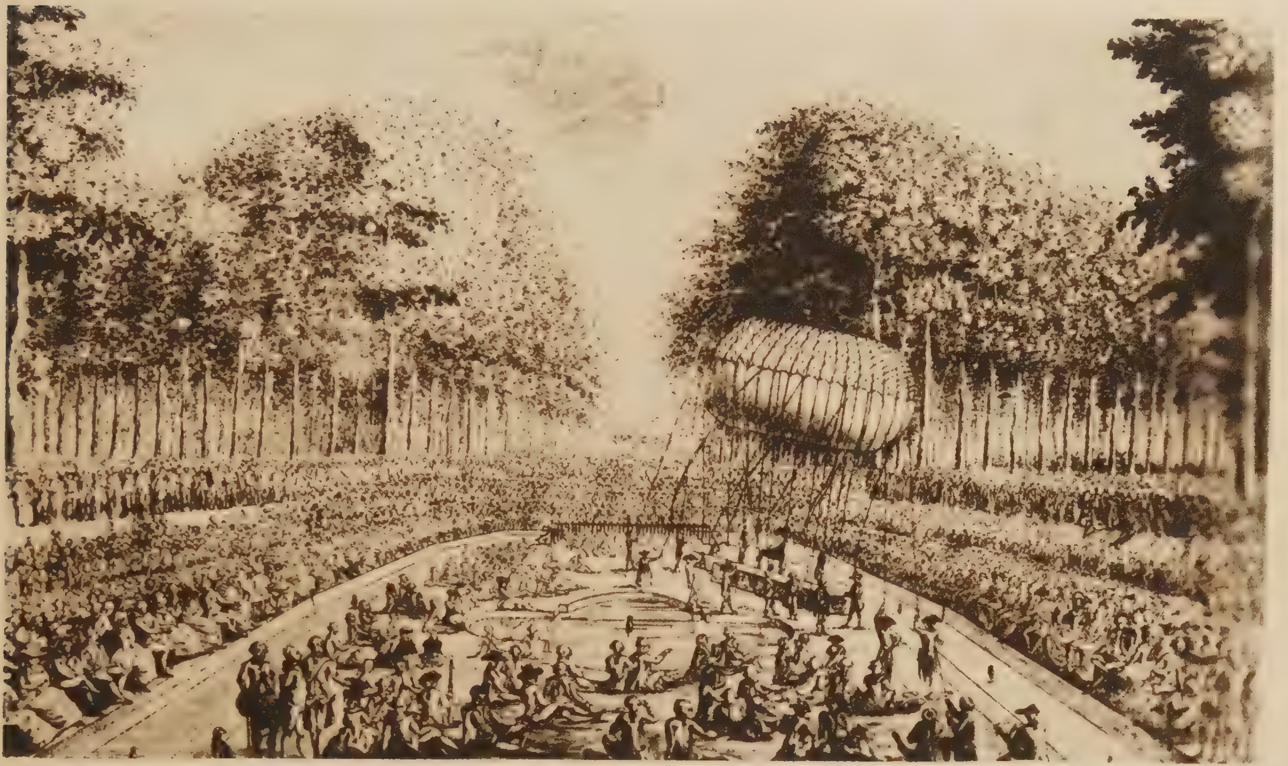
An immense crowd gathered in the Luxembourg Gardens for their trial flight (July 11, 1784). After exasperating delays, this proved a failure. A riot followed in which the balloon was burned.



Tremendous interest was aroused by the Miollan-Janinet experiment. All Paris discussed the fiasco for days. Makers of prints were quick to lampoon the unfortunate creators of the project.

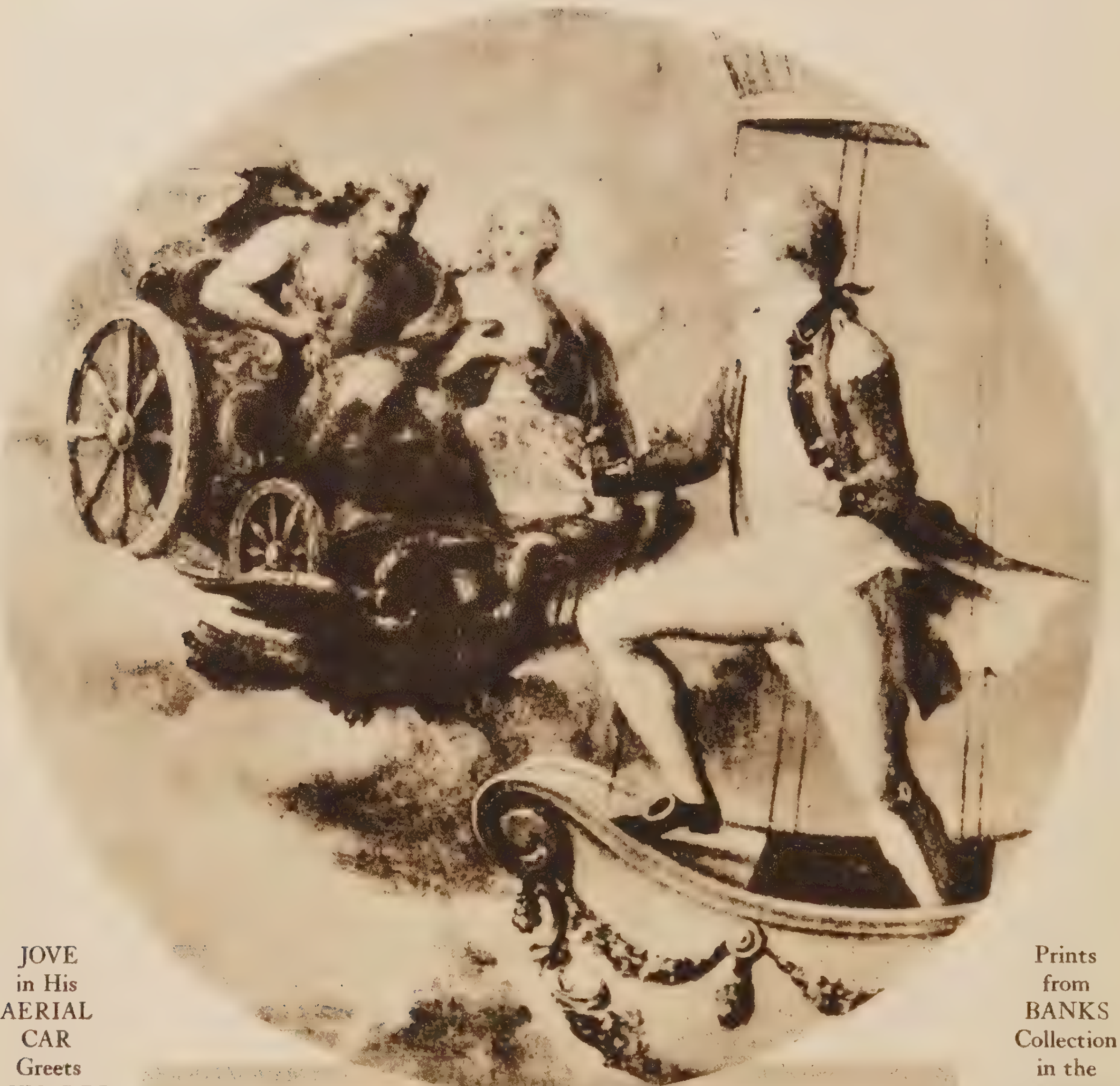
The striking cartoon (above) is from an engraved print of the time in the Harry Guggenheim Collection in New York. A great dog in the uniform of the Paris municipal police is thrusting away a puss, "Miaullant," (Miollan)—another puss, "Jean-minet" (Janinet)—and a bow-wow, "Gredin" (Bredin)—from the burning balloon. The original print of the "Balloon of Disaster" (right) is in Bibliotheque Nationale in Paris.

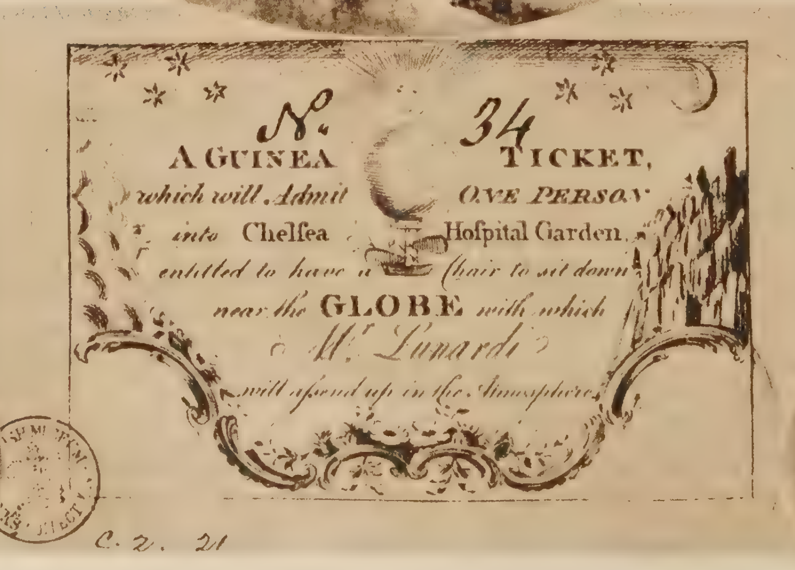
FRENCH *Develop* FIRST CYLINDRICAL *Balloon*—1784



THRONGS WITNESSING FIRST TRIAL OF ROBERT BROTHERS "WONDER SHIP" (July 15, 1784). The Duc de Chartres financed it, a regal affair, melon-shaped, 52 feet long and 32 in diameter, of silk, hydrogen-inflated. On the first trial of the craft from the Parc at St. Cloud the oars and rudder were carried away in a gust of wind on its initial rise. The twisted neck of the blocked gas-bag would have caused an explosion had not the Duc de Chartres pierced the silk with his sword. Marshal Richelieu and three other noblemen held the ropes for the second trial from the Tuileries Gardens (September 19, 1784).

LUNARDI *Hailed in* TRIUMPH *by* NATIONS *of Europe*—1784

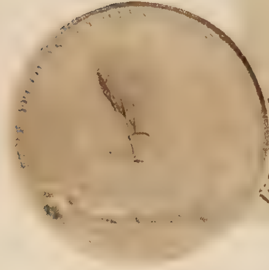




N^{o}. 34

A GUINEA TICKET,
which will Admit ONE PERSON
into Chelſea Hoſpital Garden,
entitled to have a Chair to sit down
near the GLOBE with which
M^{r}. Lunardi
will aſcend up in the Atmoſphere.

C. 2. 21



JOVE
in His
AERIAL
CAR
Greets
LUNARDI
in Clouds

Medals
Struck
in
Honor
of
LUNARDI

Prints
from
BANKS
Collection
in the
BRITISH
MUSEUM

Historic
Ticket
for
Lunardi's
First
Ascension

PART VIII

First FLIGHTS *in* ENGLAND—*New* DISCOVERY

BRITISH *Enter the "Tournament of the* CLOUDS" *in the Days of* GEORGE III

ENGLAND, rising out of the turmoil of the American Revolution and her complications with Europe in the building of the Great British Empire, now enters the new "Arena of the Air" (1784).

The First Attempted Ascent of a Human Being in England is announced (August 10, 1784). "Chevalier de Moret will ascend in the Grand and Magnificent Air Balloon, the Chinese Temple"—a week later the attempt is made and proves disastrous.

The First Actual Ascent in Great Britain is made by Tytler in Edinburgh (August 25, 1784). Crosbie's Aerostatic Chariot is being exhibited near Dublin about this time, and later falls into the Irish Sea.

The First Ascent in England is by Lunardi, (September 15, 1784), the Italian who is to reach fame and then descend to poverty, finally to die in a Benedictine monastery in Portugal. These events with their pictographic records are all recorded.

We look upon Keegan's Fire Balloon in a much-heralded ascension at Portland Place (September 29, 1784) as it meets disaster, catching fire and "utterly destroyed." The blame is placed on Colonel Gardner, an aide-de-camp to General Sir William Howe in the American Revolution.

The First English Aeronaut is Sadler, who makes his historic Ascent at Oxford, (October 4, 1784), according to approved records. Blanchard, the famous French Aeronaut, appears in England (October 16, 1784) with Sheldon as the First English Passenger. Pilon's "Aerostation, or the Templar's Strategem," is performing at Covent Garden (October 29, 1784) in the first drama with its plot based on the "topic of the day."

We find in London during these "exciting times," the American Dr. Jeffries, with the Frenchman, Blanchard, making the First Scientific Observation from a Balloon (November 30, 1784), which is to result in the "Greatest Sensation of the Century," in the following year.

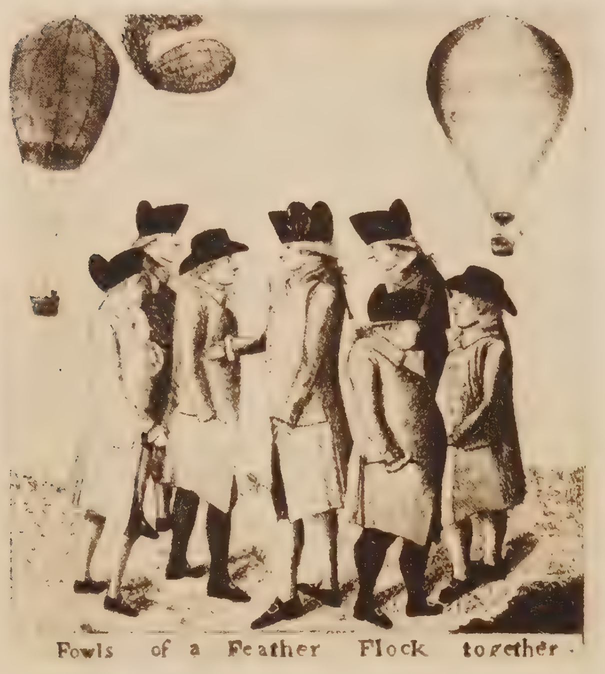
The cartoonists are "spoofing" the events with their "Battles of the Balloons," "Flying Fishes" are being forecast in Spain. "Bull Fights in the Air" are being urged by the Spaniards. "The French Aerial Navy" is being proclaimed. European inventors are presenting many ingenious schemes.

These events are taking place against a brilliant historical background. Burke, Chatham, Fox and the younger Pitt are the powers in the English Parliament. Adam Smith is stirring the world with his "Wealth of Nations." Gibbon is at work on his "Rise and Decline of the Roman Empire."

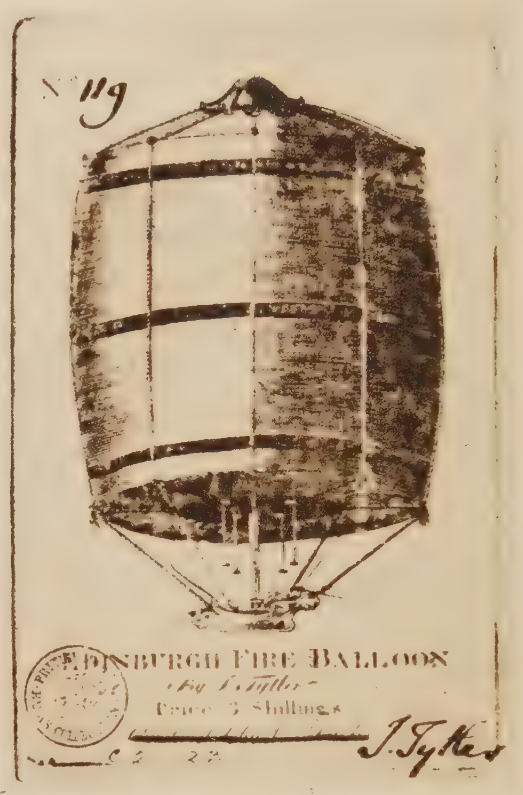
Robert Burns is a "rising young poet." Johnson and Boswell are in their heyday. Wordsworth, Sir Walter Scott, Congreve and Lamb are mere boys, thoroughly aroused over the "Great Events in the Air."

Gainsborough, Raeburn, Reynolds, Romney, and Lawrence are the painters of the day. Clive has just founded the Empire of British India and passed away. Warren Hastings is homeward bound to be impeached by his political enemies. And above all, the American Revolution has severed the English-speaking family and set up two powerful Anglo-Saxon groups in the progress of nations.

FIRST ASCENT *in* SCOTLAND *at* EDINBURGH—1784


Fowls of a Feather Flock together

FAMOUS AERONAUTS AT EDINBURGH—Etching by John Kay (1784)—Vincent Lunardi—James Tytler—Kay himself—John Mitchell (hardware merchant)—James Neilson (writer)—John Spottiswood (magistrate)—Myles McPhail (known as "Lord North the Caddy," because of resemblance to Lord North).



No 119

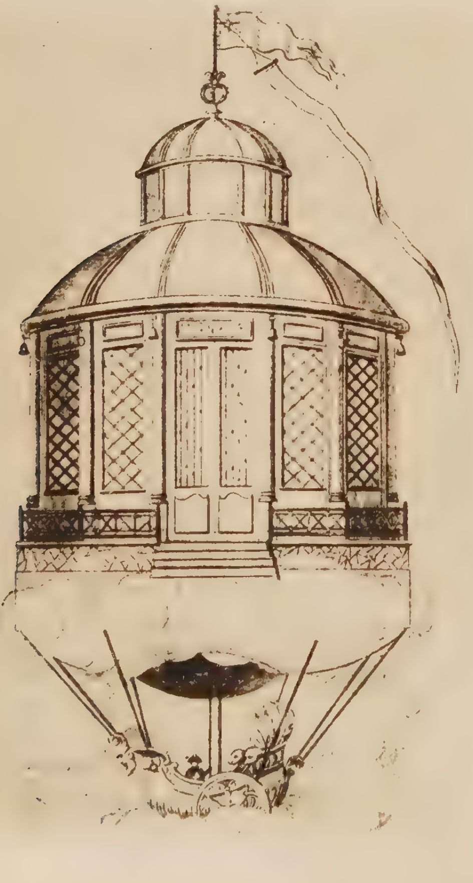
EDINBURGH FIRE BALLOON

by J. Tytler

Price 3 Shillings

J. Tytler

TYTLER'S SIGNED ADMISSION TICKET



JAMES TYTLER'S "Edinburgh Fire Balloon" (above) made the first ascent in Edinburgh (August 25, 1784), and thus its constructor is the "First Balloonist to Ascend from British soil."

Tytler studied medicine and surgery under Dr. Black (Page 117) and practised for a time. Later, he became editor of the *Encyclopedia Britannica*. He was editing the Third Edition when, with money obtained by public subscription, he built a hot air balloon 40 feet high by 30 feet in diameter. After two attempts, Tytler succeeded in ascending to a height of several hundred feet. His balloon finally was destroyed in a storm some months later.

Vincent Lunardi, of Italy, was the "First Aerial Traveler in *England*" (pages 168–171). Tytler, however, must be given historical record for the "First Balloon Ascension in *Great Britain*."

The Chevalier de Moret, a Swiss engineer, met with failure. He appeared in London (January, 1784) with the announcement of an "Aerostatic Machine, 60 feet high, 95 feet in circumference, and with a capacity of 33,400 cubic feet in the form of a Chinese temple."

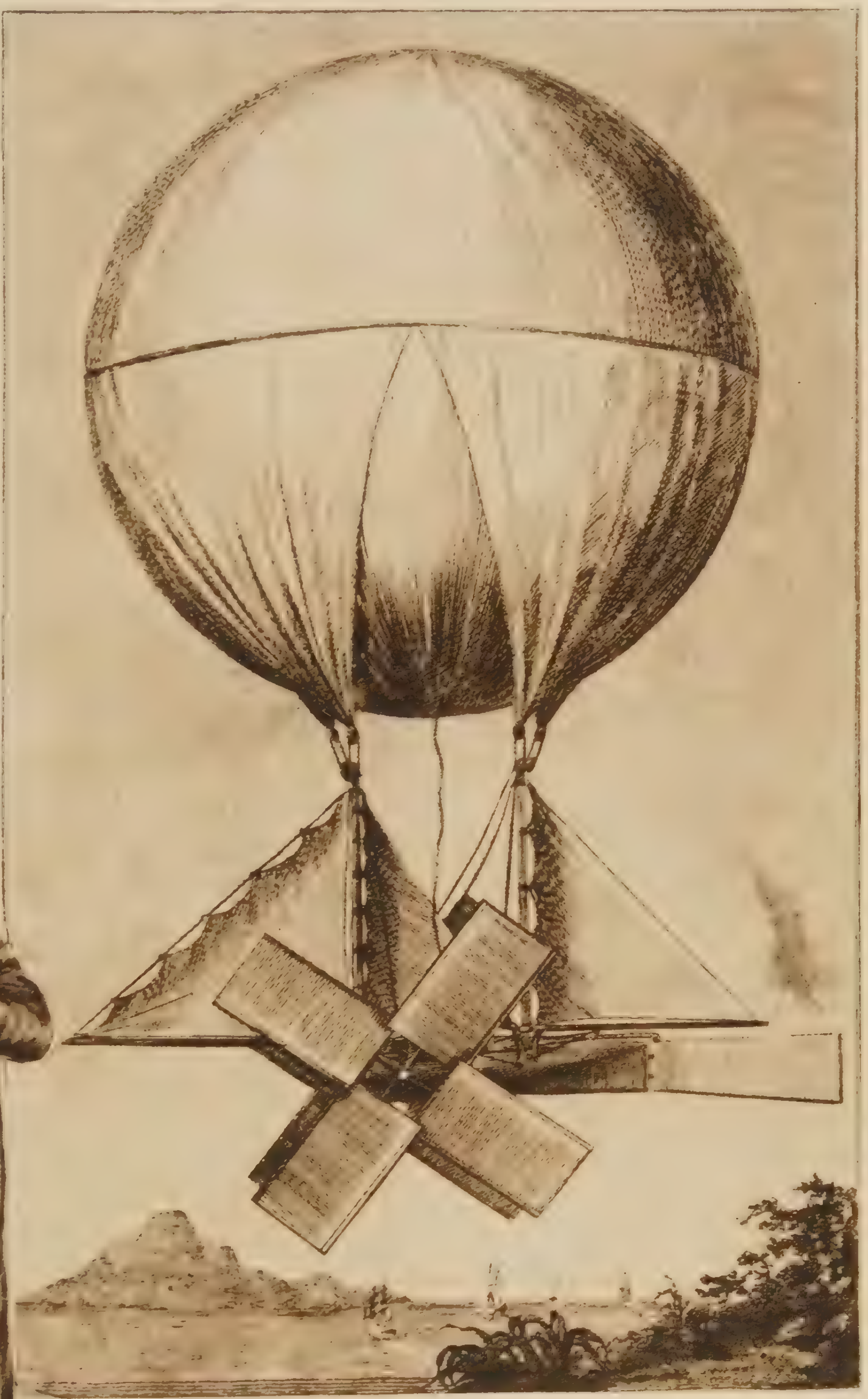
After extravagant newspaper publicity and the "reduction of the admission price to sixpence" at Five Fields Row, Chelsea, (August 10, 1784), an immense throng gathered to see the balloon rise—within the enclosure. Adjoining fields, roads, treetops, and on housetops for miles about, crowds gathered to watch for hours, finally to meet only disappointment. Moret's balloon (left) was finally burned, either accidentally or at the hands of the enraged mob, which broke through all barriers.

First ASCENT *in* IRELAND—*Dublin's Aeronautic* CHARIOT

THE First Aeronaut in Ireland was Sir Richard Crosbie (1755–1800). Crosbie was one of the first in the United Kingdom to examine thoroughly the discovery of the Montgolfiers. He built an "Aeronautic Chariot". It was a hydrogen balloon beneath which was a boat-shaped car with two masts, silken sails, wind mill vanes and rudder of silk (right). This he exhibited at Ranelagh, near Dublin (August 1784).

Crosbie inflated his Chariot and sent it up on the end of a very long cord in favorable weather, sometimes carrying a weight and sometimes with a small animal aboard. Eventually he released it altogether and it was blown out to sea and landed on the Isle of Man.

This portrait of Sir Richard Crosbie (below) was engraved for the *Hibernian Magazine* (1785).



CROSBIE'S CHARIOT—PRINT IN THE DUBLIN LIBRARY

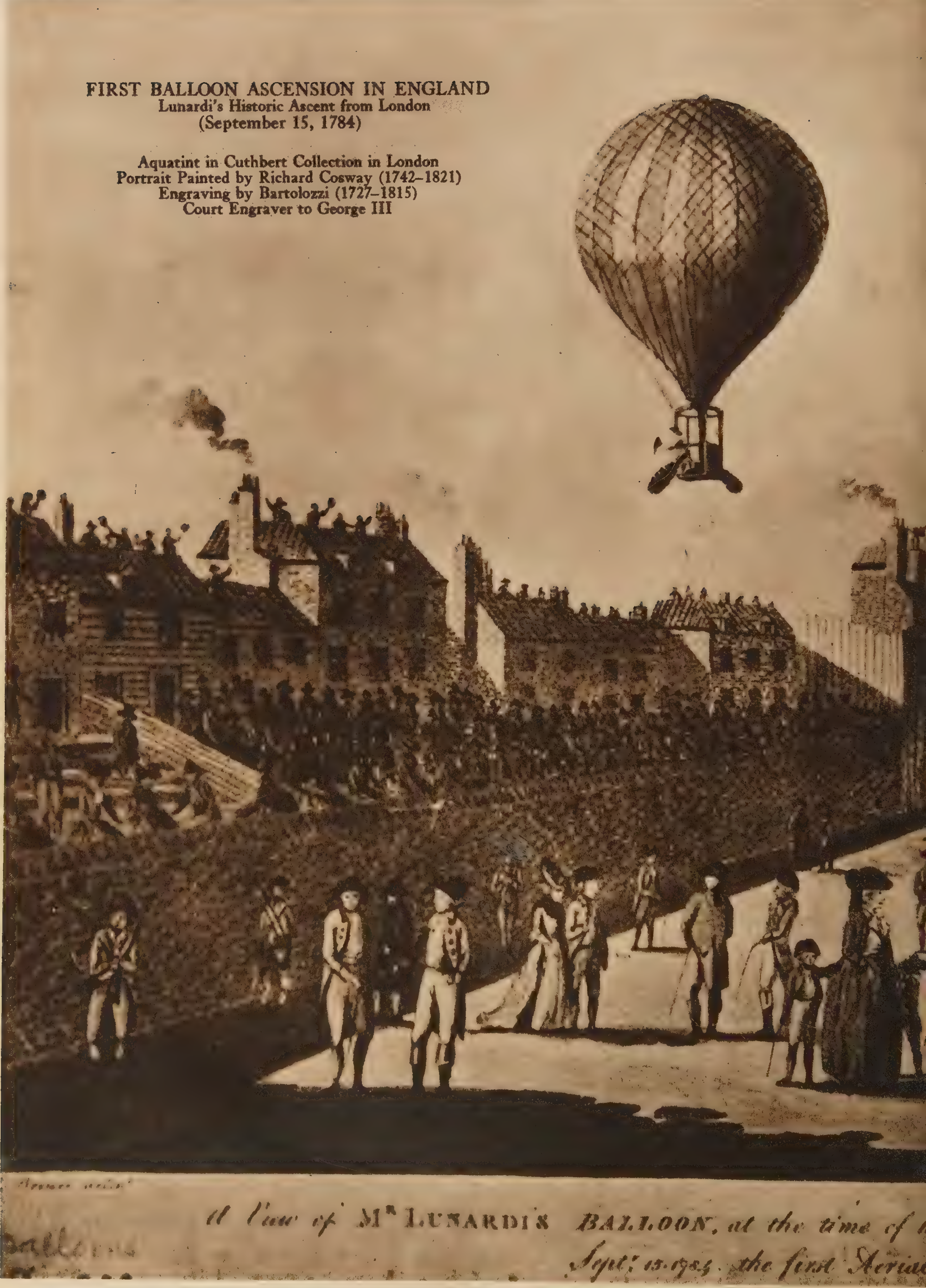
Sir Richard Crosbie (left) wore the first Aeronaut's uniform, or "Flying clothes"—a long coat of "oiled silk lined with fur, a waistcoat and breeches of quilted satin, morocco boots and Montero leopard skin cap."

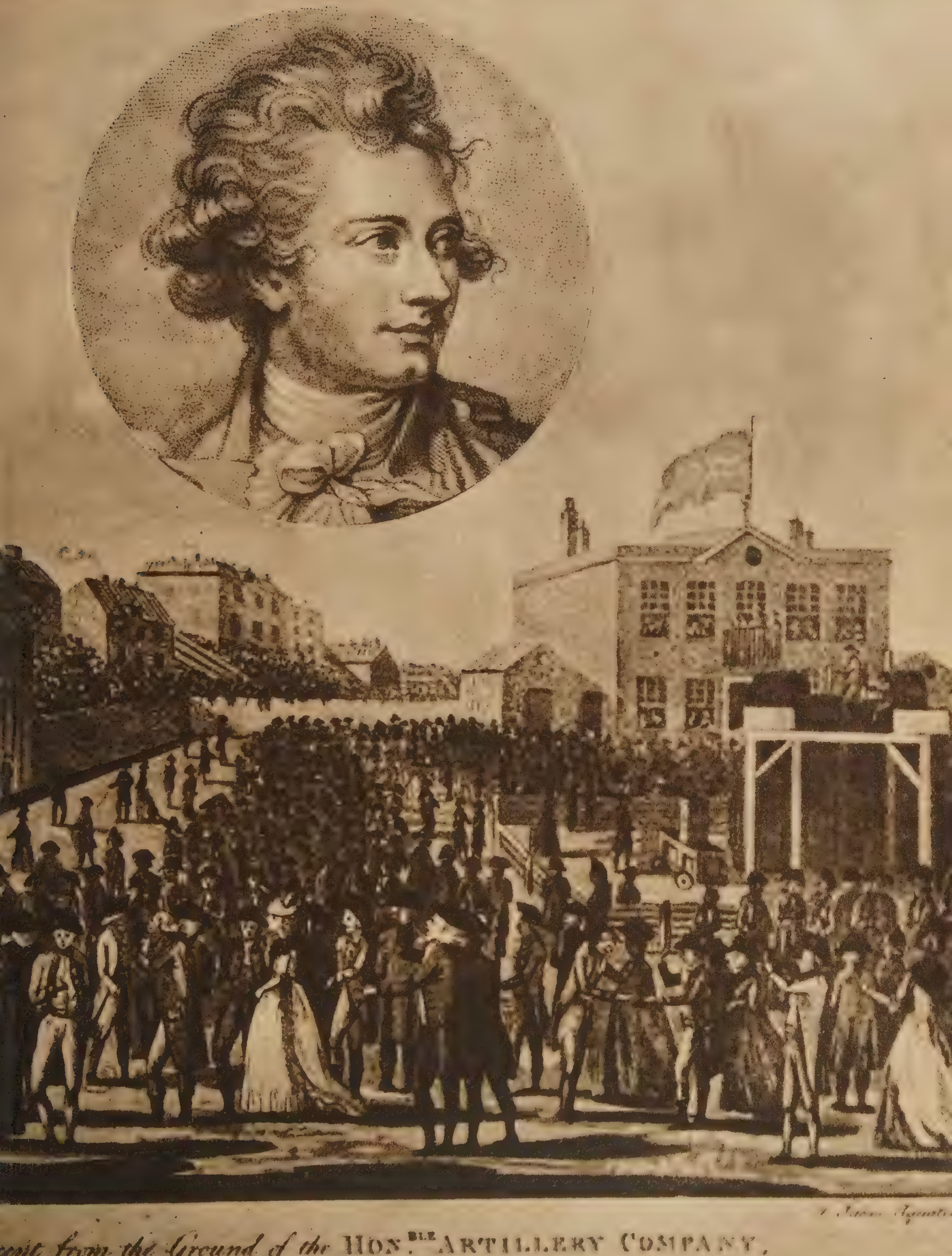
Sir Richard made the First Ascension in Ireland (January 19, 1785). His new large balloon was handsomely painted with the arms of Dublin. He rose so rapidly as to be out of sight in three or four minutes, but soon opened the balloon's valve and came down in safety near the Irish Sea.

FIRST BALLOON ASCENSION IN ENGLAND

Lunardi's Historic Ascent from London
(September 15, 1784)

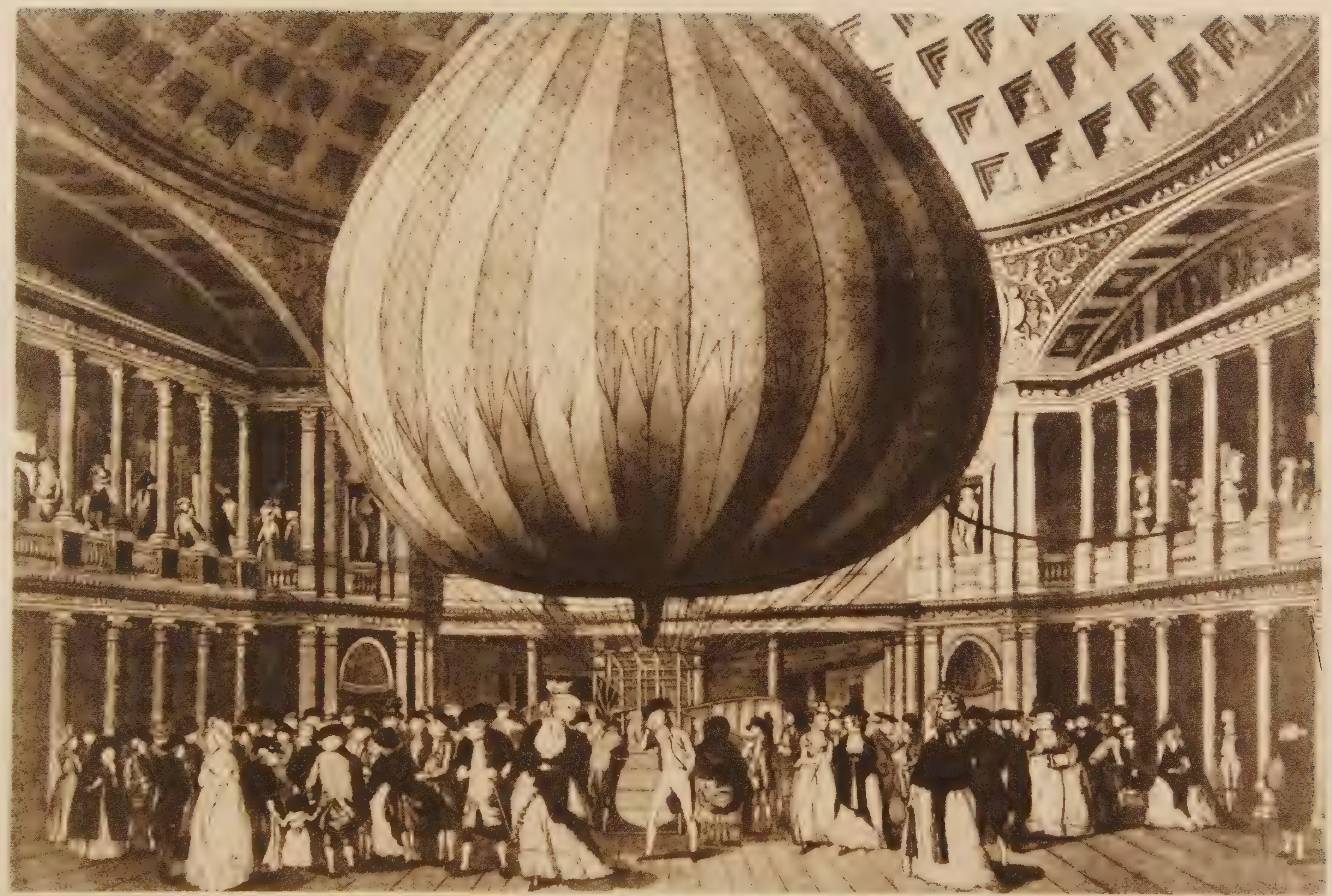
Aquatint in Cuthbert Collection in London
Portrait Painted by Richard Cosway (1742–1821)
Engraving by Bartolozzi (1727–1815)
Court Engraver to George III


A View of Mr. LUNARDI'S BALLOON, at the time of
Sept: 15.1784. the first Aerial



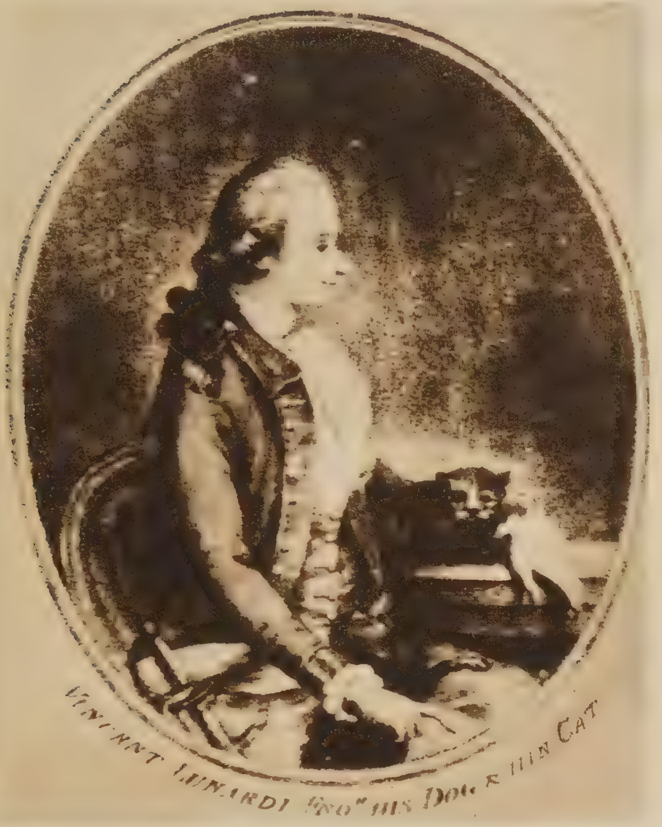
J. Jones Sculp

cent from the Ground of the HON.$^{\text{BLE}}$ ARTILLERY COMPANY,
veller in the English Atmosphere.



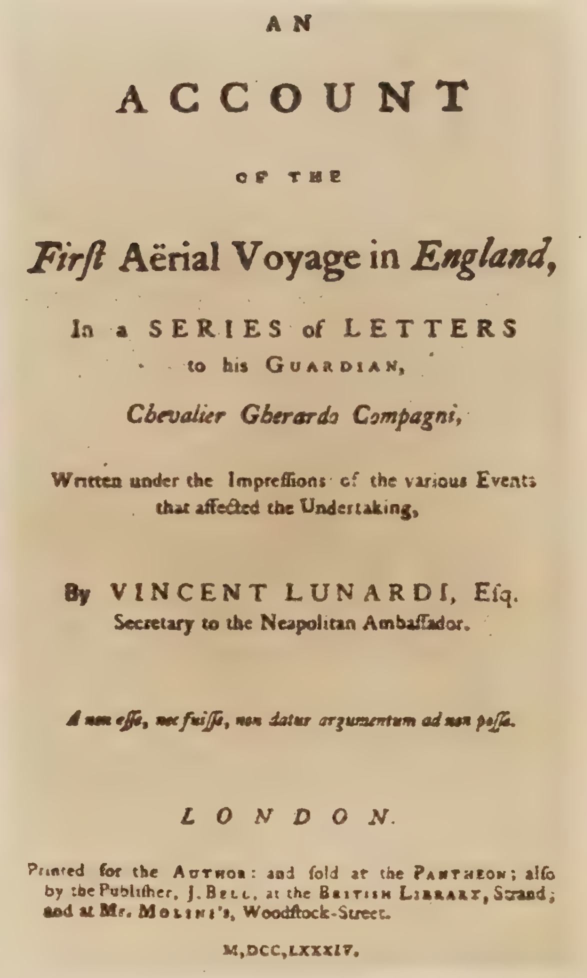
LUNARDI'S HISTORIC BALLOON ON EXHIBITION IN LONDON VIEWED BY ALMOST THE ENTIRE POPULATION.
This Old Print is Deposited in the Collection of Dr. F. J. Poynton

LUNARDI *Records* HIS FIRST VOYAGE *in England*—1784



PORTRAIT OF LUNARDI WITH DOG AND CAT which accompanied him on the First Ascension in England. They, too, were Exhibited to the Crowds in London.

Painting (above) is on Silk in the Collection of Sir David Salomans, Bart.



AN

ACCOUNT

OF THE

Firſt Aërial Voyage in *England*,

In a SERIES of LETTERS
to his GUARDIAN,

Chevalier Gherardo Compagni,

Written under the Impreſſions of the various Events
that affected the Undertaking,

By VINCENT LUNARDI, Eſq.
Secretary to the Neapolitan Ambaſſador.

A non eſſe, nec fuiſſe, non datur argumentum ad non poſſe.

LONDON.

Printed for the AUTHOR: and ſold at the PANTHEON; alſo
by the Publiſher, J. BELL, at the BRITISH LIBRARY, Strand;
and at Mr. MOLINI'S, Woodſtock-Street.

M,DCC,LXXXIV.

LUNARDI'S BOOK IN BRITISH MUSEUM

VINCENT LUNARDI (1759–1806) is the "First Aerial Traveler" to ascend from England. An Italian, born in Lucca, he accompanied Prince Caramin to London when the latter became Neapolitan ambassador at the English court. Lunardi was First Secretary of the Embassy. A magnetic youth of 22 years, he became interested in ballooning. Gallant, handsome, vivacious, and with a charm of manner, he made himself an instant social success in England.

Inspired by the aeronautical experiments of his fellow countryman in London—Count Zambeccari—Lunardi wrote Sir George Howard, Governor of Chelsea Hospital (July 1784), with the approval of the British King, George III, to ask if he might use the grounds of the hospital for a "Balloon Ascension."

"I shall divide amongst pensioners in the hospital any profits which might accrue," he declared. His request was freely granted.

Suddenly, came the Moret fiasco (Page 166). Sir George Howard withdrew permission to use the hospital grounds, plunging Lunardi into despair. But he had feminine friends not easily daunted, and unexpectedly he obtained permission to make his ascension from the grounds of the Honourable Artillery Company at Moorfields.

This First Ascent in England (October 15, 1784) took place in the presence of the Prince of Wales and Lord North, Pitt, Fox, Burke and other distinguished personages, including the brilliant and lovely Duchess of Devonshire.

About 1 P.M.—Lunardi shook hands with the Prince. He lifted his dog and cat into the balloon car—climbed in himself—and was off into the sky. He rose four miles, then descended near North Mimms. Giving his cat, not pleased with ballooning, into the keeping of a woman, he went up again, finally landing safely in a field near Ware, in Hertfordshire. Dr. John Sheldon (Page 173) followed him on horseback.

Lunardi's popular success was instant and very great. He became social "Lion" of the times. "I had this day in three letters, three histories of (Lunardi) the Flying Man in the great Balloon," wrote Dr. Samuel Johnson. Lunardi bonnets and even Lunardi garters were in fashion among the ladies, the former to be celebrated in verse by the Scottish poet, Robert Burns.

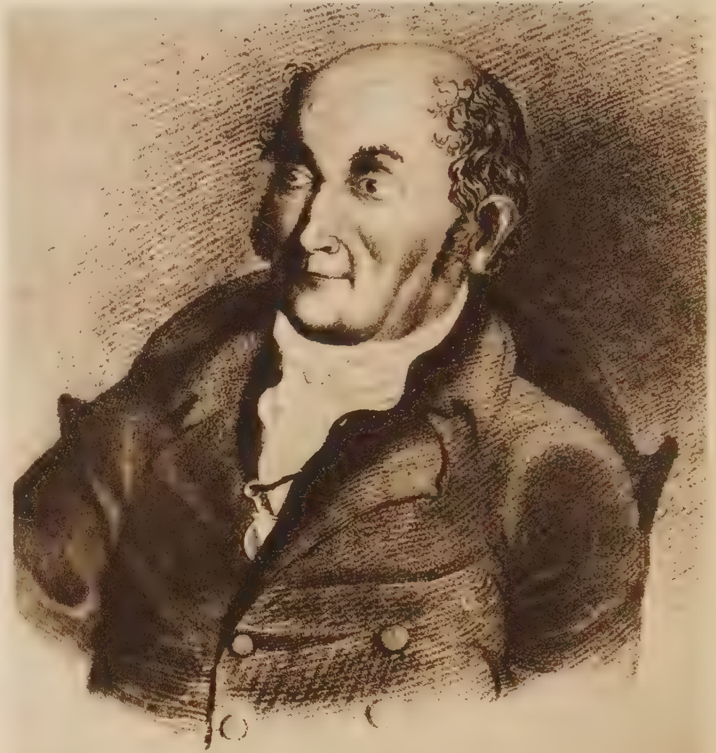
FIRST ENGLISH AERONAUT *in Ascension at* OXFORD—1784

JAMES SADLER of Oxford (1751–1828) comes into aeronautical history at this point—the First *Englishman* to make a Balloon Ascension. He and his two sons, figure in British aerial history for years to come.

Sadler had inherited a confectionery shop in the university town of Oxford, but his taste was for science and engineering. He sent up two hot-air balloons in Oxford (February 1784) and experimented with gas balloons. He made This First Ascension in a "Montgolfiere" (October 4, 1784). The *Oxford Journal* records. the event, making these statements (quoted verbatim):

"Early on Monday Morning the 4th, instant, Mr. Sadler of this City, tried the Experiment of his Fire Balloon, rised by means of rarefied Air. . . . The Process of filling the Globe began at three o'clock, and about Half past Five all was complete, and every Part of the Apparatus entirely adjusted. . . . Mr. Sadler, with Firmness and Intrepidity, ascended into the Atmosphere, and the Weather being calm and serene, he rose from the Earth in a vertical direction to a Height of 3,600 Feet. . . . In his elevated Situation he perceived no Inconvenience; and, being disengaged from all terres-trial Things, he contemplated a most charming distant View; . . . . After floating for near Half an Hour, the machine descended, and at length came down upon a small Eminence betwixt Islip and Wood Eaton, about six Miles from this City."

Cavallo (Page120) in his *History of Aerostation* (undated) insists no one saw this ascent, but is alone in questioning it; and Sadler's further aerial record is beyond cavil. He *was* the First English Aeronaut.



James Sadler Esq.
First English Aeronaut
Drawn & Engraved by R. Taylor

James Sadler made a second ascent (November 12, 1784) from the Physic Garden in Oxford, in a hydrogen gas balloon, before a throng which crowded every possible point of vantage. In his boat-shaped car, he was out of sight among the clouds in three minutes.

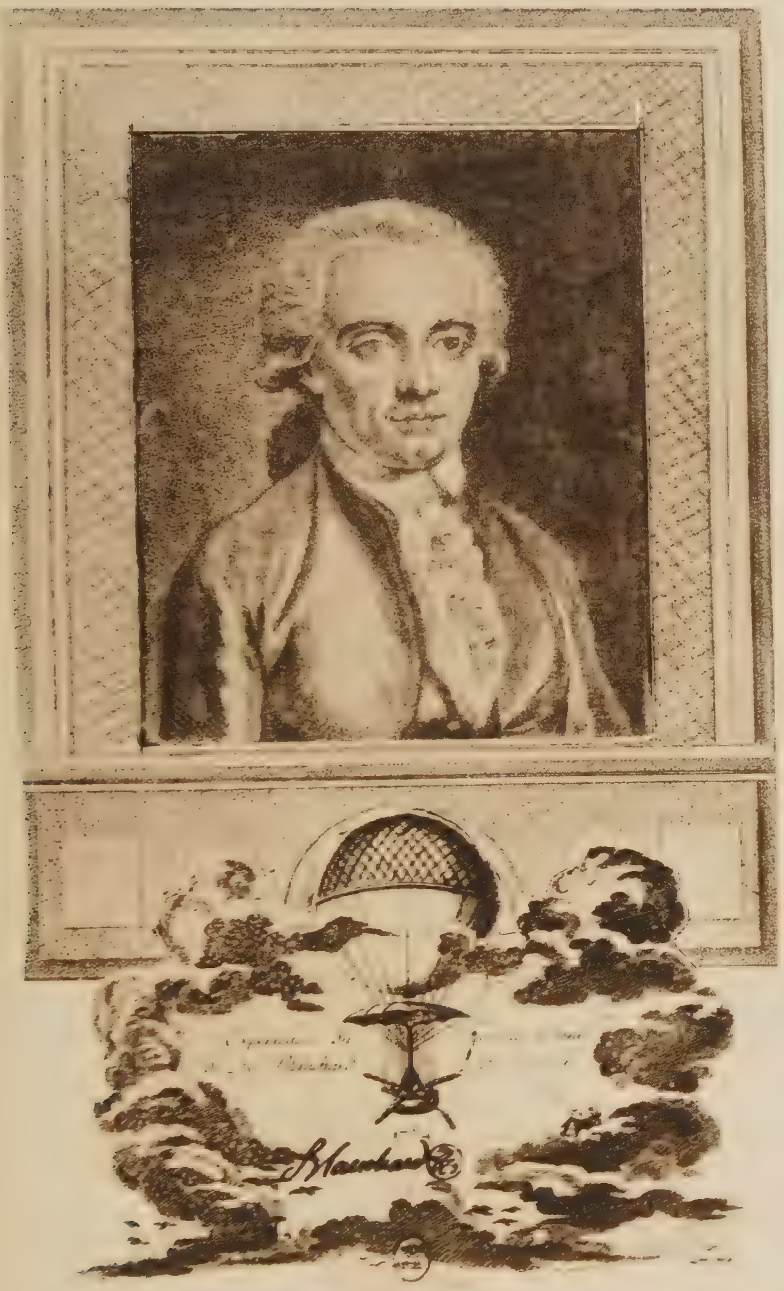
He struck a strong air current which carried him rapidly northeast and was obliged to throw out all ballast, instruments and provisions, to prevent a descent far too sudden because of the escape of gas through a rent in the balloon.

Sadler journeyed by air 14 miles in 17 minutes, finally landing at Hartwell, near Aylesbury. He was dragged a considerable distance when the balloon reached the ground—and it was wrecked. He later sold the balloon to Harper of Birmingham for £120.

Balloon ascensions by Sadler, in different parts of England, were numerous in the next year or two. Then he seems to have abandoned the air to his sons, John and William Windham Sadler, but he resumed ballooning again in middle age—24 years later—as we shall see in these pages.

The etching (left) is of an ascent of Sadler's from Hackney at a later date, an impression of which is in the British Museum. The portrait of James Sadler (above) is a rare engraving by Taylor in the Bella C. Landauer Collection.

FIRST ENGLISH PASSENGER-SHELDON *With Blanchard*—1784



BLANCHARD'S FIRST ASCENT IN ENGLAND

JEAN PIERRE BLANCHARD is the most distinguished of the World's Earliest Aeronauts. We have seen how he had made his first balloon voyages in France.

Blanchard's first English balloon ascent was from the Royal Military Academy in Little Chelsea (October 16, 1784). He was accompanied by Dr. John Sheldon, Professor of Anatomy to the Royal Academy of Surgeons, who thus became England's "First Air Passenger."

Over 400,000 observers saw the spectacle. The two voyagers, waving flags, rode the air for an hour and a half—to land safely in Sunbury. When Dr. Sheldon stepped out of the balloon car, Blanchard reascended, landing eventually near Romsey, 73 miles from London.

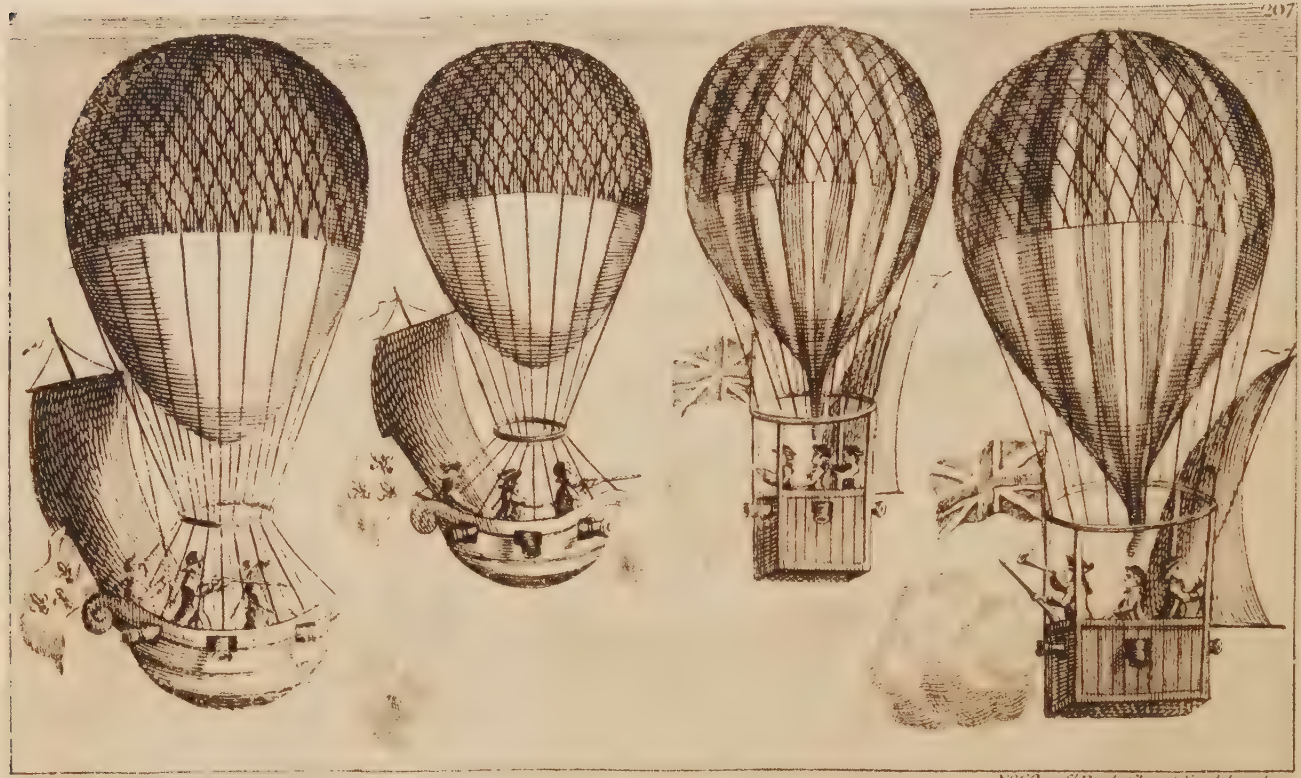
The ticket (above) is to Blanchard's first Paris ascent and is in the collection of the Bibliotheque Nationale.

DR. JOHN SHELDON (1752–1808) is recorded to have invited Blanchard to England, possibly through Faujas de Saint Fond, who visited Sheldon (1784), probably in connection with the balloon project of Allen Keegan, a London umbrella maker, which turned out a failure.

Sheldon, who had backed Keegan, was a noted scientist, keenly interested in aerial navigation. He followed Lunardi on horseback (Page 171). Finally, with Blanchard, Dr. Sheldon became England's "First Air Passenger." Their intention was to cross the English channel, but conditions were against this. We shall see that Blanchard did it three months later (Page 183), with another passenger.

PORTRAIT OF DR. JOHN SHELDON

“WAR *in the* AIR” *Prophesied by* ENGLISH *Cartoonists*—1784


207
No 69 in St Pauls Church Yard London

Behold an odd Fight, two odd Nations between,
Such odd fighting as this was never yet ſeen; —

The BATTLE
of the
BALLOONS.

But ſuch Fights will be common (as Dunce to feel Rod)
In the Year of One Thouſand eight Hundred and odd.

AERIAL WARS were feared by the Nations for centuries—as far back as the Chinese, as we have seen. With the appearance of the Balloon, they became “actualities” in the minds of the people. This old cartoon is documentary evidence (1784). It predicts: “Behold an odd Fight two odd Nations between . . . such odd fighting as this was never yet seen. . . but such Fights will be common (as Dunce to feel Rod) . . . in the Year of One thousand Eight Hundred and odd.”

The balloon—and its possibilities—quickly became the favorite theme of the cartoonist’s jibes and the engraving tool. Sarcastic, occasionally serious, these engraved prints were published day by day and sold in the stationer’s shops—to reach a very considerable circulation.

The weekly newspaper was now nearly two hundred years old; the daily newspaper was in its earliest beginnings—when balloons began to be matters of common concern and interest. England’s first daily, the *Morning Chronicle* (started in 1769) and the *London Times* (founded January 1, 1785) were just in time to record these events. The cartoon was the only news picture—except for crude woodcuts in advertisements.

These Balloon Cartoons and engravings reflect the popular mood and mind of the day. We shall see a number of them in these pages. The cartoon (above) is an impression in the Collection of J. E. Hodgson in London. It was published by Carrington Bowles (1784). Its caption speaks for itself.

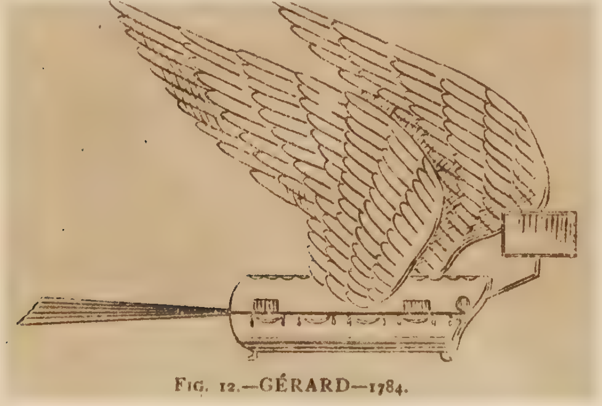


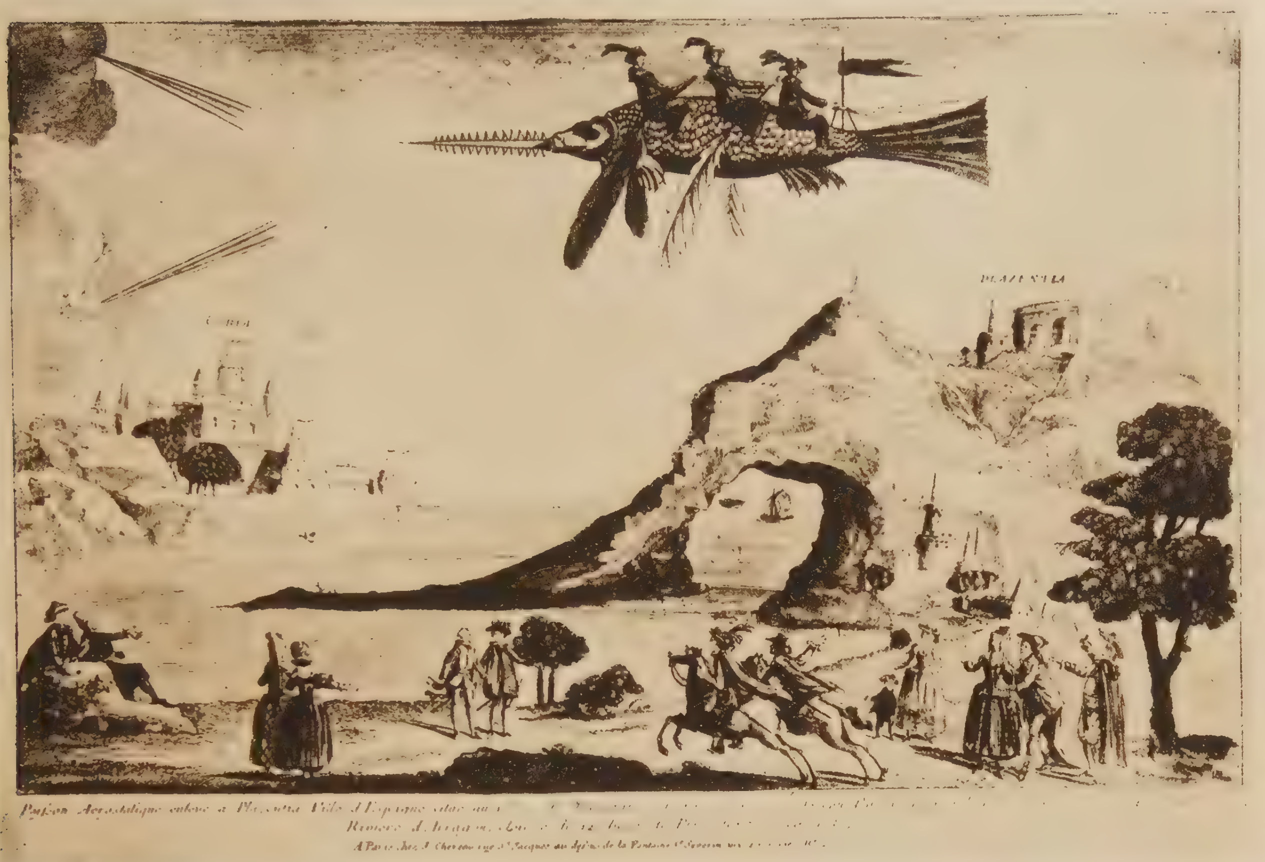
FIG. 12.—GÉRARD—1784.

GIRARD’S “FLYING MACHINE” WITH “POWER”

The success of the first balloons encouraged inventors to pursue the next “Great Discovery”—flying machines. Chanute in “*Progress in Flying Machines*” says, referring to these times: “Inventors who experimented with flapping wings, with which they tried to raise themselves on the air by muscular effort, doubtless had it in mind to substitute artificial motors, if only they could catch the trick by which the bird flies.”

We find Girard, Frenchman (1784), attempting this achievement. He designed (left) a Flying Machine with body, wings, tail, steering arrangement in front and evidently feet upon which to land. The inventor filed this sketch with French authorities without stating what motive power he meant to use—and there is no record.

"AFFAIRS d'AMOR *in* HEAVENS" *Suggest the* ENGLISH—1784



IMAGINATION RUNS RIOT AS WEIRD SCHEMES MAKE THEIR APPEARANCE IN EUROPE—WHEN THE FRENCH REVOLUTION IS BREWING

REVOLUTION in the Arts, Sciences, and throughout human society were fomenting in Europe (1784). Men who were soon to organize the "Reign of Terror" and go to the guillotine were devising schemes and plans for utilizing the new power to overthrow Governments.

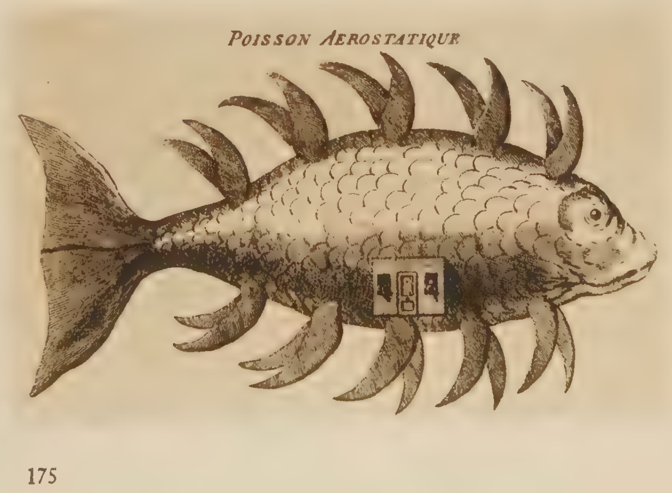
We present herewith two historic exhibits: The famous Giant Flying Saw Fish of Spain (above)—and the Aerostatique Fish (below) of a social revolutionary leader in France, a friend of Robespierre who was soon to fall in the flood of blood that was to sweep through the streets of Paris.

The Giant Flying Fish of Spain (above) is an immense dirigible with huge fins to propel it and a great tail to steer it. This is alleged to have been built by one Dom Joseph Patinho and to have been flown by him from Plazentia to Coria, 12 leagues distant (March 13, 1784)—across the Tagus River in Spain. This print was engraved by Bresse in Paris (1784) and the original is in the Bibliotheque Nationale. It shows two rowers at the fins and a steerman at the tail.

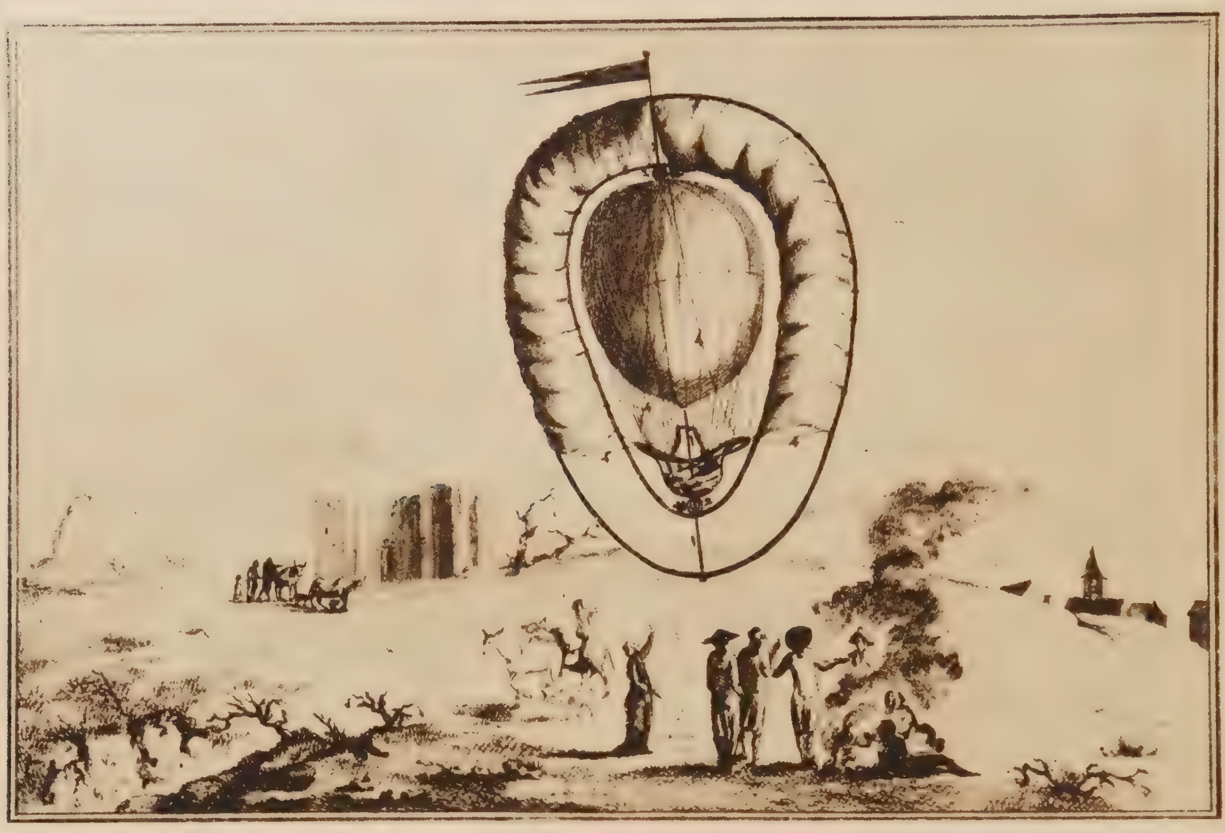
This print (right) is the ingenious plan of a leader of the French Revolution who "Organized the Reign of Terror"—Antoine Louis Leon de Richebourgh de Saint-Just (1767-1794), a comrade of Robespierre.

M. de Saint-Just inflamed Paris with his speech and also wrote a brochure in his youth, "*Le Globe Aerostatique de MM. Montgolfiere es sur le Revolution,*" in which he predicted that the whole course of mankind was to be radically changed. This engraving is the original design which he presented in his document.

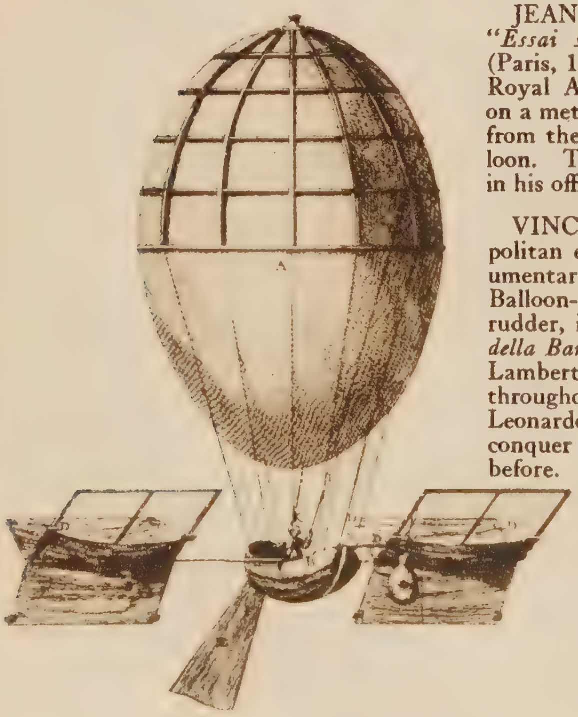
We find M. de Saint-Just at the Fall of the Bastile—we hear him in his first fiery speech before the National Convention demanding the condemnation and execution of Louis XVI—and as a grand climax to a turbulent career, we see him as he walks to the guillotine and his head goes under the knife.



European INVENTORS *Present* INGENIOUS SCHEMES—1784

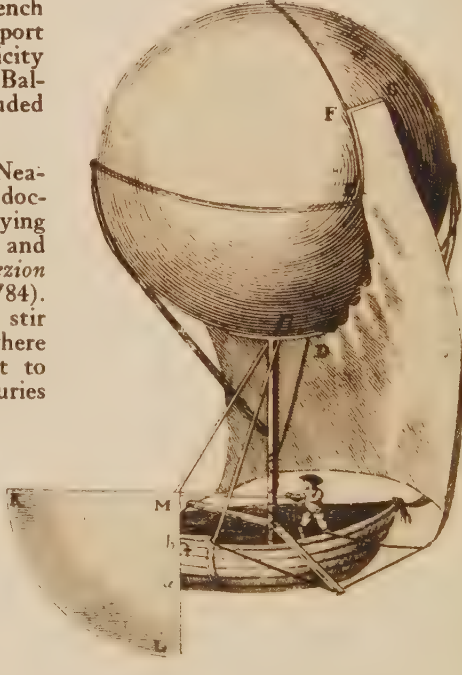


THIS "Franconville Balloon" (above) was the first definite attempt at a dirigible airship. It was constructed at the instance of the Comtesse d'Albon by F. Marie de Lussy, a French engineer. It made its ascension (January 16, 1784) from the gardens in the d'Albon estate at Franconville. The balloon was a "Charliere." An oval sail was to steer the balloon. There is record of one ascension and one may assume the affair not to have been a success. Rare print in the Bibliotheque Nationale.

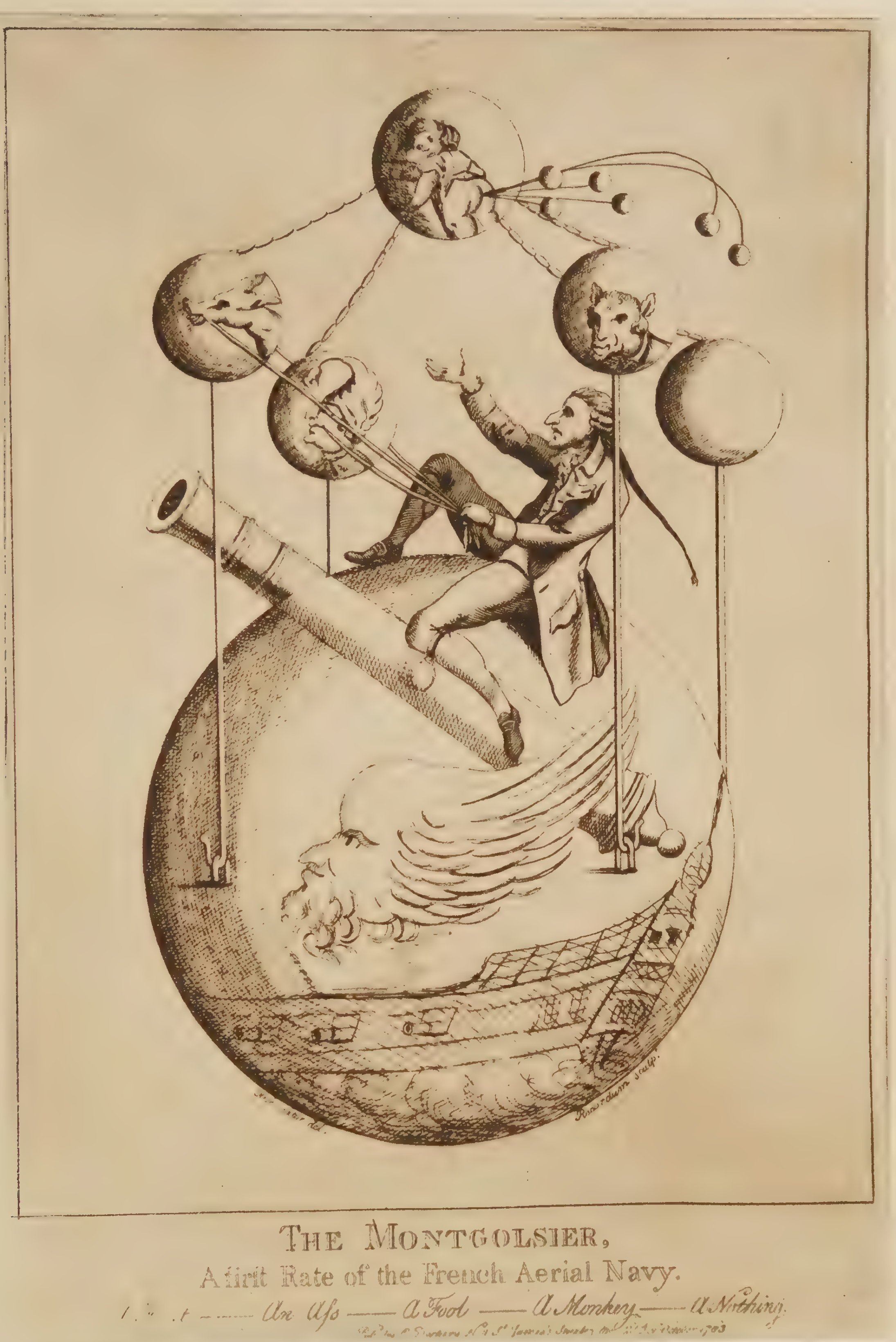


JEAN-LOUIS CARRA in his "*Essai sur la Nautique Aerienne*" (Paris, 1784) presents to the French Royal Academy of Sciences report on a method of obtaining Electricity from the Air for guidance of a Balloon. This plate (left) is included in his official documents.

VINCENZO LAMBERTI, Neapolitan engineer, presents with documentary evidence this "Flying Balloon-Boat" (right) with sail and rudder, in his "*Saggio sulla direzion della Barca Volante*" (Naples, 1784). Lamberti's genius made a great stir throughout his native Italy, where Leonardo da Vinci had sought to conquer the Air three centuries before.

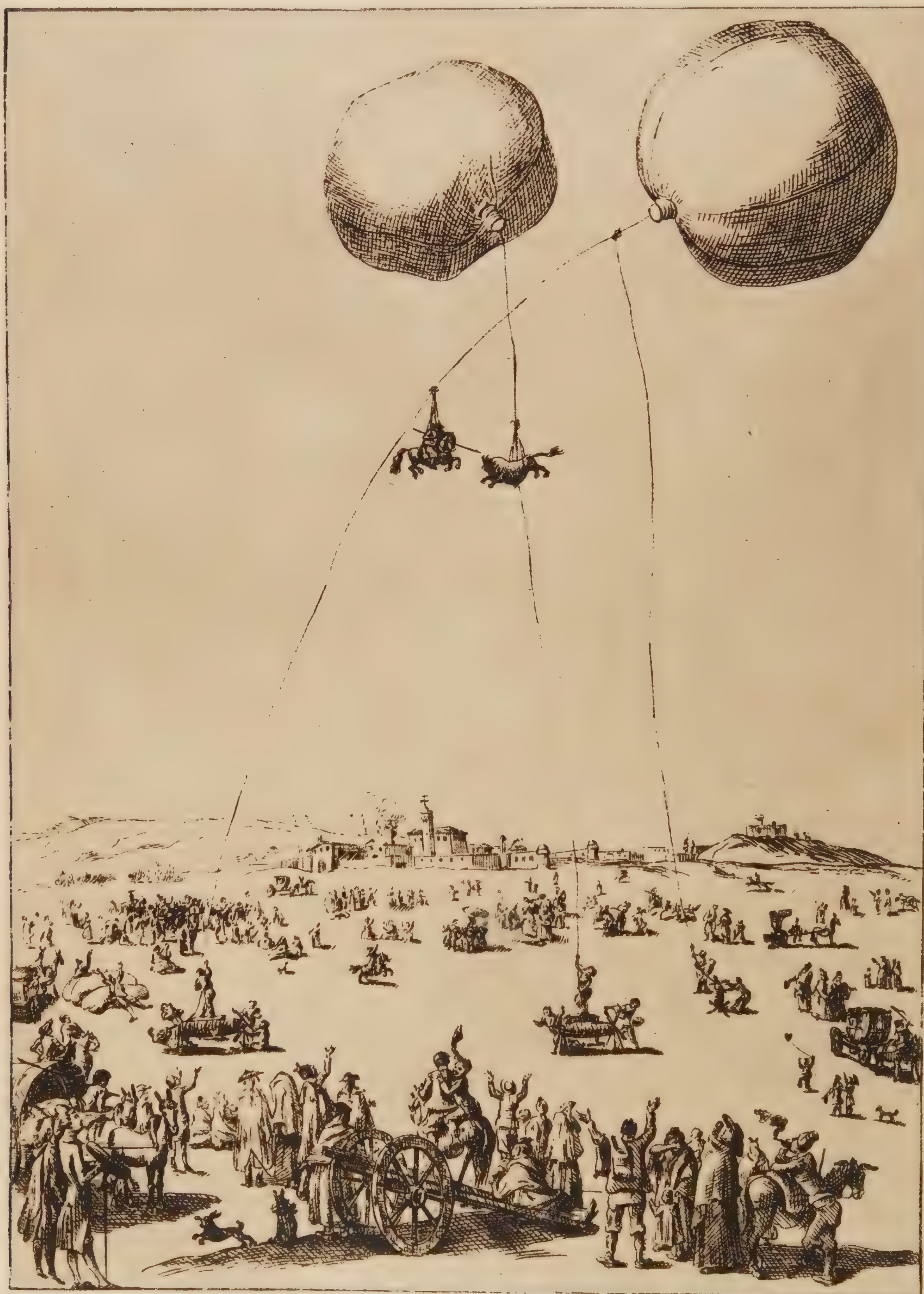


VIOLENT ATTACK *on* "FRENCH AERIAL NAVY"—1784


THE MONTGOLSIER,
A firſt Rate of the French Aerial Navy.
—— An Aſs —— A Fool —— A Monkey —— A Nothing.

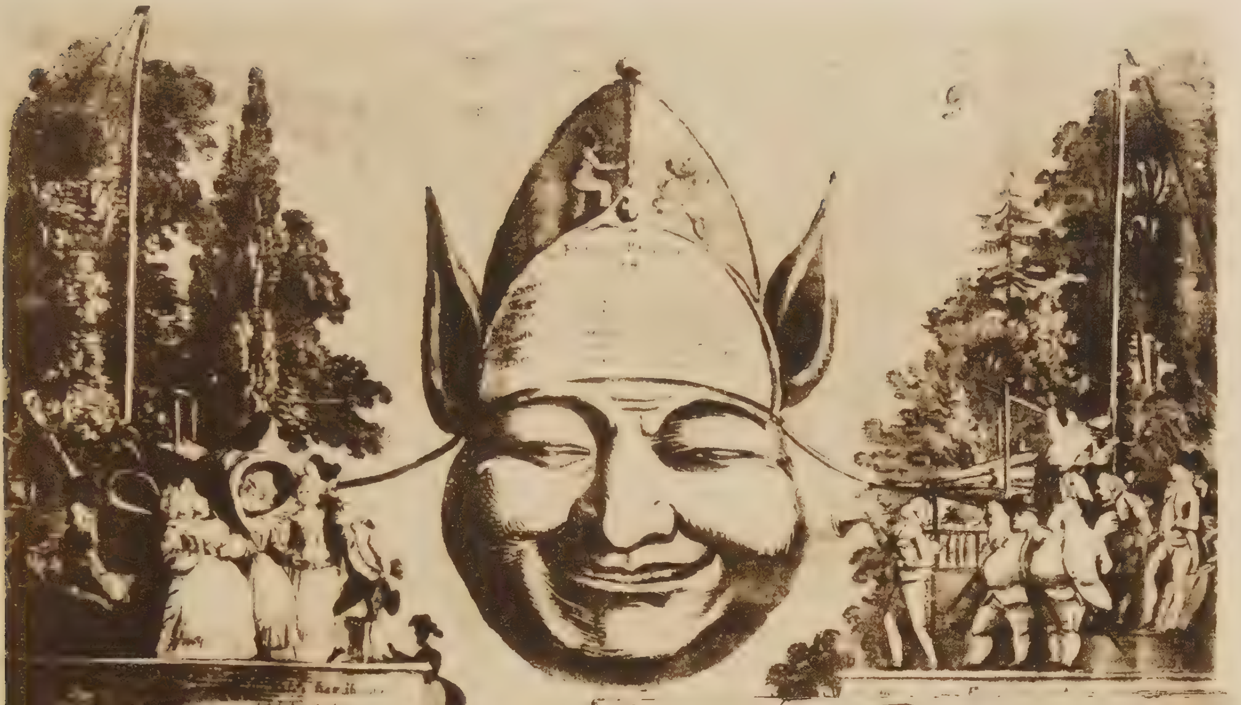
English Cartoon Lampooning "French Aerial Navy"—Published by Dockery (London, 1783)
—Original in the Bella C. Landauer Collection in New York.

"BULL FLIGHTS *in the* AIR" *Demanded by the* SPANISH—1784



Old Spanish Print—Caricature of "A Bull Fight in the Air"—Impression in Bibliotheque Nationale in Paris.

BRITISH *Balladists Declare* "WORLD IS ALL MAD"—1784



WE close this momentous year in aerostation (1784) with two Merry England cartoons — a rollicking climax to a portentous year. The caricaturist evidently believes that "the world has gone mad."

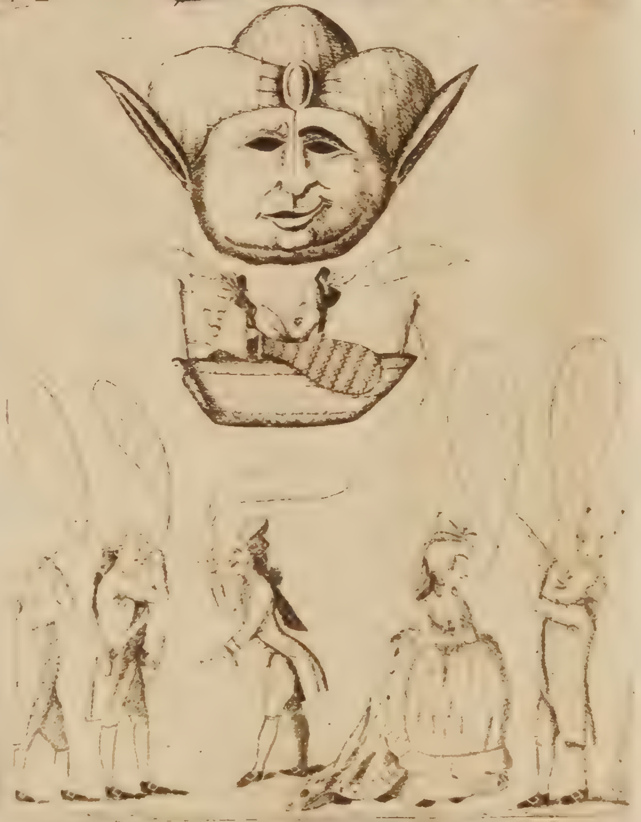
The print (above) was circulated throughout Great Britain. It is a huge madcap balloon in human form. It quotes Pope's *Dunciad*, in which incidentally, there is a satirical reference to Bishop Wilkins' "extravagant suggestion" of flying to the moon. The verse on the forehead of the balloon face reads:

"When the World is all Mad, it is sure the best rule
To go smooth with the current in playing the Fool
'Tis a lesson in practise by Simple John Bull
O the Mad Folks of Old England, etc.

I wish some wise Doctor would point it out plain
How the Gas or Mad Mercury enters the Brain
Then I wish he would cure it, but fear it is vain
O the MAD Folks of Old England, etc."

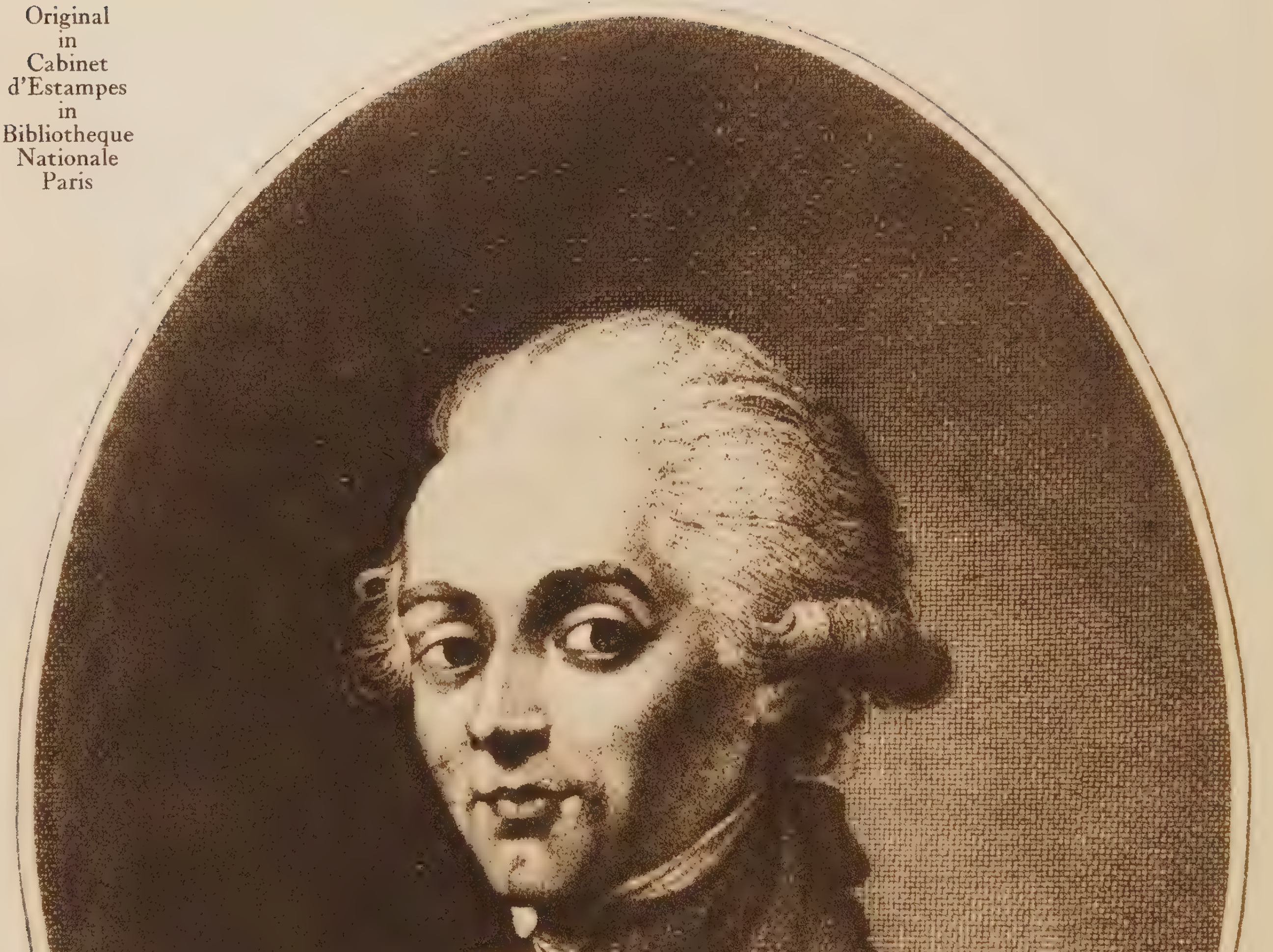
The cartoon (right) is a risque document concerning the fads and follies of the times. It bears this inscription: "Ye masters of Packets! Ye poor silly loons!—Sell your boats and get Blanchard to make you balloons; For our fair modern Witches, no longer aquatic, Will never more cross but in boats Aerostatic."

The speeches of the figures relate to amorous adventures in the air. The word blotted out is "DEVILISH." Cartoons in Collection of Sir David Salomons, Bart., England.



BRITISH BALLOON, AND D[redacted] AERIAL YACHT.

Original
in
Cabinet
d'Estampes
in
Bibliotheque
Nationale
Paris



JEAN PIERRE BLANCHARD.

PART IX

First CROSSING *of* ENGLISH CHANNEL *in the* AIR

HISTORIC VOYAGE *of Frenchman and American Unites the* NATIONS

A MOMENTOUS EVENT awakens the world. "The borderline of Nations is crossed in the Air!" "The frontiers are broken down by the Great Discovery!" "The seas no longer are barriers."

"What will be the end of it all?" Is it a menace that has befallen the world—or is it the "Dawn of the Greatest Age in Human History?" "Will the human race destroy itself with its genius—or will it ultimately unite itself into a great human brotherhood?"

These are the questions that perplex the nations on this epochal day (January 7, 1785) when a "Ship of the Air Crosses the English Channel from England to France"—the First Crossing of the Seas—the First Air Voyage between nations.

Three countries are brought together by this event: Great Britain, where the journey starts—France, where it ends—and America, which finances it.

Blanchard, the Frenchman, is the aeronaut who accomplished it. With him as the First International Passenger is Dr. Jeffries, an American from Boston. It was at that time (1785) a more daring and hazardous journey than the First Crossings of the Atlantic Ocean more than a century and a quarter later.

Events follow each other rapidly. Crosbie ascends in Dublin (January 19, 1785); Zambeccari ascends in London (March 23, 1785); Sadler ascends with Windham at Moulsey Hurst, and then alone at Manchester (May 5 and 16–19, 1785), reaching the great height of 13,000 feet; Deeker ascends from Norwich (June 1, 1785); Major Money ascends with Lockwood from London (June 3, 1785).

The First Tragedy of the Air now takes place—De Rozier, the First Man in the World's History to Sail in the Air, falls from the clouds in a burning Balloon and is killed (with Romain) near Boulogne (June 15, 1785), while attempting to Cross the English Channel from France to England. Potain fails to cross the Irish Sea (June 17, 1785).

The "First English Female Air Traveller"—Mrs. Sage—ascends with Biggin in London (June 29, 1785). The First Balloon Ascent in Holland is made by Blanchard at The Hague (July 12, 1785).

Crosbie falls in the Irish Sea (July 19, 1785) while attempting to cross to England. Major Money is lost in the North Sea and finally rescued (July 22, 1785). Lunardi ascends from Liverpool (July–August, 1785). Arnold appears with his "Royal Balloon and Parachute" at St. George's Field (August 31, 1785).

The First Balloon Ascension in Germany is made by Blanchard at Frankfurt-am-Main (October 3, 1785). Lunardi ascends in Scotland (October–December, 1785) and later in Naples, Madrid, Lisbon and the capitals of the Continent.

The First Memorial is erected to the First Martyr of the New Science of Aeronautics. The forerunner of the modern Zeppelin appears in Paris. Politicians in England and France fear the "New Age."

These events are taking place on the threshold of great political revolutions. In America, the new republic is ratifying its Constitution (1787). The First Settlement is being made in Australia (1788). The Bastille is being stormed in Paris (July 14, 1789) France is proclaimed a Republic (1792). The First Legislature is in session in Canada (1793).

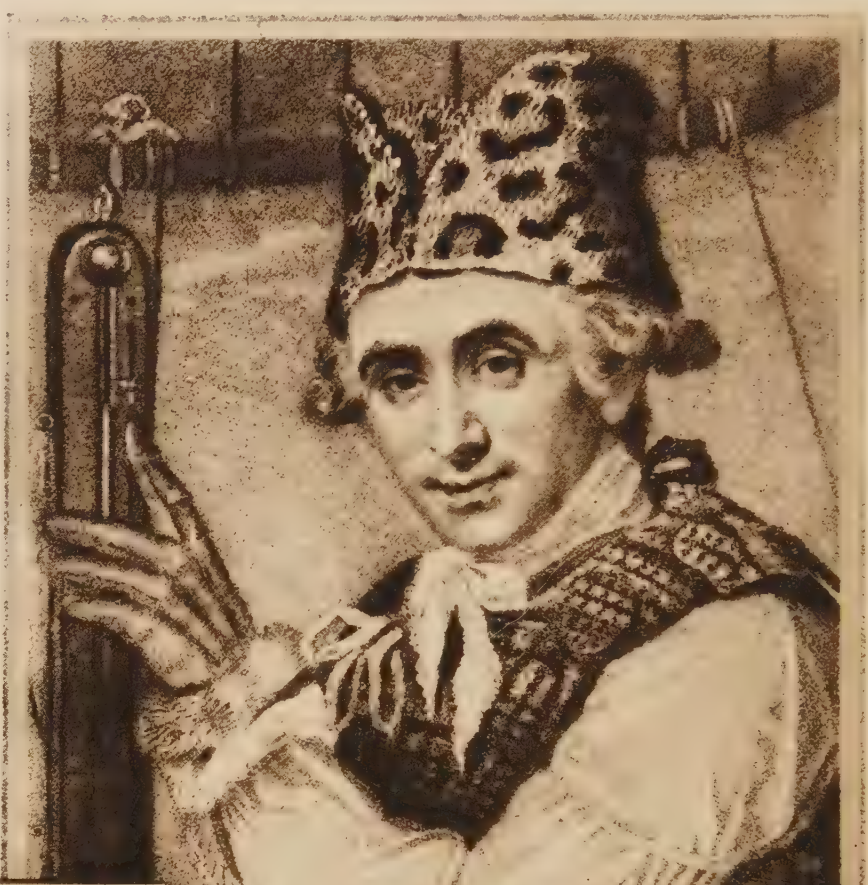
Daring ADVENTURE *Gained* WORLD-WIDE FAME—1785

LET us introduce here the American who financed this "amazing adventure" and who was the "First Air Passenger Across the English Channel"—Dr. John Jeffries of Boston (right).

Dr. Jeffries (1744–1819) was a distinguished member of a prominent and well-to-do Boston family. Harvard (1763)—he took his medical degree in London (1769). He practiced for a time in Boston, but became annoyed at the "bigoted conservatism" of some of his confreres and returned to London (1779) to work with the famed British surgeon, Dr. John Hunter.

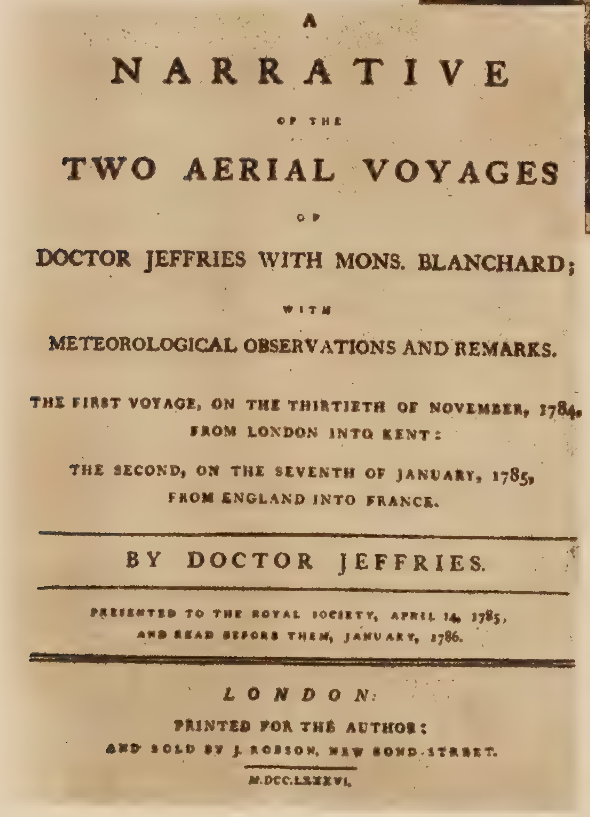
Financing Blanchard's "Channel Crossing by Air" to an extent of over £700, he paid the aeronaut an extra £100 to make the trip with him. Dr. Jeffries returned to Boston (1789) and practiced medicine here for thirty years.

This stipple engraving of Dr. Jeffries (right) is by Caroline Watson after pastel portrait by John Russell, R. A. Impression in the British Museum. It shows him holding the barometer he carried across the English Channel.



PORTRAIT OF DR. JOHN JEFFRIES (HARVARD-1763)

We present herewith the title page of Dr. Jeffries' book on his adventures—also the ticket to Dr. Jeffries' first ascension with Blanchard on the latter's "Fifth Aerial Voyage." Original Documents in Banks Collection in British Museum.



A

NARRATIVE

OF THE

TWO AERIAL VOYAGES

OF

DOCTOR JEFFRIES WITH MONS. BLANCHARD;

WITH

METEOROLOGICAL OBSERVATIONS AND REMARKS.

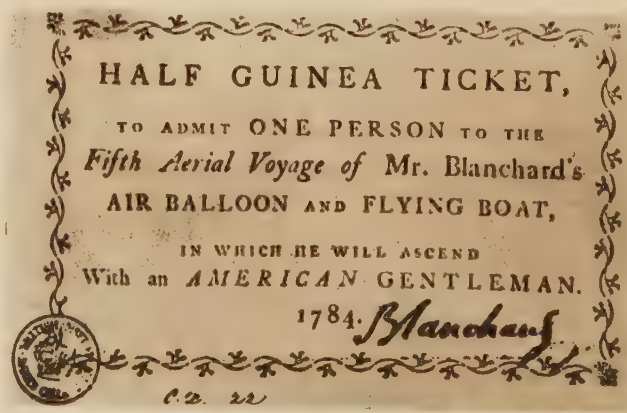
THE FIRST VOYAGE, ON THE THIRTIETH OF NOVEMBER, 1784,
FROM LONDON INTO KENT:

THE SECOND, ON THE SEVENTH OF JANUARY, 1785,
FROM ENGLAND INTO FRANCE.

BY DOCTOR JEFFRIES.

PRESENTED TO THE ROYAL SOCIETY, APRIL 14, 1785,
AND READ BEFORE THEM, JANUARY, 1786.

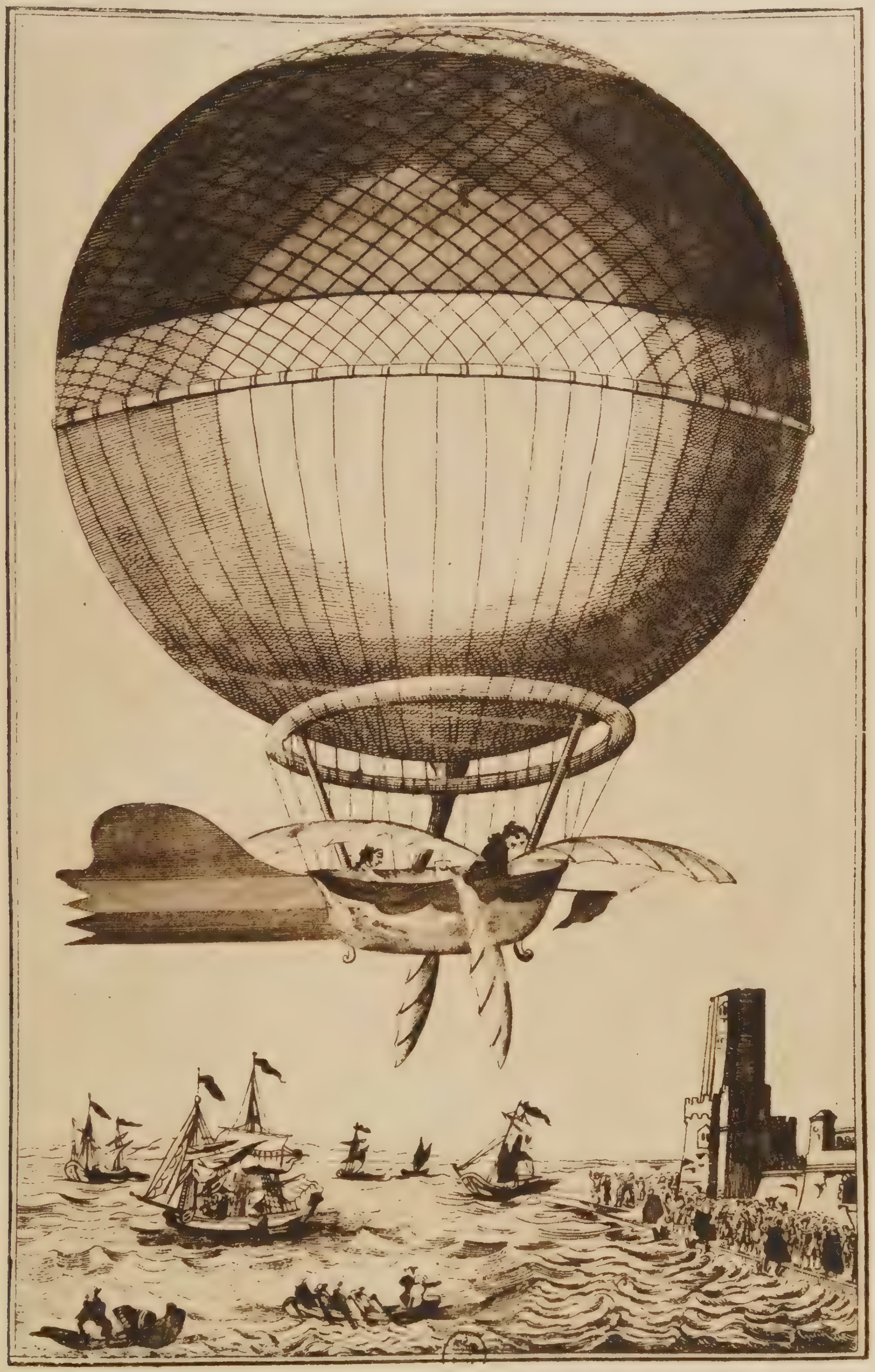
LONDON:
PRINTED FOR THE AUTHOR:
AND SOLD BY J. ROBSON, NEW BOND-STREET.
M.DCC.LXXXVI.



HALF GUINEA TICKET,
TO ADMIT ONE PERSON TO THE
Fifth Aerial Voyage of Mr. Blanchard's
AIR BALLOON AND FLYING BOAT,
IN WHICH HE WILL ASCEND
With an *AMERICAN* GENTLEMAN.
1784. Blanchard

C.2. 22

First INTERNATIONAL *Voyage*—ENGLAND *to* FRANCE—1785



BLANCHARD AND JEFFRIES ON FIRST CROSSING OF THE ENGLISH CHANNEL
Historic French Engraving (dated 1785)—Impression in the Bibliotheque Nationale in Paris.

"Greatest FEAT *of* CENTURY" *Proclaimed by* WORLD—1785

THE EIGHTH Wonder of the World is the designation that was given to the "First Crossing of the English Channel in the Air" (January 7, 1785). Throngs hailed Blanchard, the Frenchman, and Dr. Jeffries, the American, with an ovation fit for Emperors.

Louis XVI of France, awarded Blanchard 12,000 francs, with an annual pension of 1,200 francs. A monument was erected in their honor to mark the spot of their historic landing near Calais.

France and America gained a notable victory. It was at 1 p.m. this winter day that the huge gas-filled balloon, with Blanchard and Jeffries, rose over the chalk cliffs of Dover. A light wind slowly drifted the aerial voyagers toward the southeast. The cliffs were crowded with sightseers. Every sort of craft afloat was filled with men and women to see the first balloon venture out over the sea.

Blanchard was nervous from the outset. He had tried to prevent Dr. Jeffries from accompanying him at the last moment. Only a firm attitude on the latter's part brought him to carrying out his compact. The American doctor even had been obliged to agree to jump overboard into the Channel if all else failed.

The air travelers had but 30 pounds of sand ballast in the balloon. When well out over the Channel they were compelled to spill all of this and throw the bag away to prevent descending into the water.

As the view of the approaching French coast grew clearer—about 2:30—it became apparent that again they were descending much too rapidly for safety or comfort. They had lost about a quarter of their gas.

"We immediately threw out all the little things we had with us, such as biscuits, apples, etc.," records Dr. Jeffries in his book, "and after that one of our oars, or wings; but still decending, we cast away the other wing. (They threw out all movable apparatus.) Notwithstanding all which, the Balloon not rising, we cut away all the linings and ornaments . . . and threw them into the sea." Then they threw out all cords and ropes—anchors.

"Still approaching the sea, we began to strip ourselves," Jeffries relates. Blanchard first threw away his extra coat and surtout; then Jeffries *his only coat,* then Blanchard his other coat and *trousers.* Dr. Jeffries, being a physician, proposed to throw up the food they had eaten. They put on and adjusted their cork jackets and prepared to be plunged into the sea.

"We were then preparing to get up into our slings," says the historian of the voyage, "when I found the mercury in the barometer again falling, and looking around, soon observed that we were rising, and that the pleasing view of France was enlarging and opening to us every moment."

Rising higher than at any previous time during the crossing—at exactly 3 o'clock—they *reached their goal!* Over the high ground on the coast of France, between Cape Blanc and Blackness, near Calais, they passed over the forest of Guines at so low an altitude as to be able to seize the branches of trees and bring the balloon to earth—after two hours or more in the air.

The victory was won! The aeronauts deflated their balloon and were conducted to Calais, where the gates were officially opened for them—it being past midnight when they reached the French city.

First ENGLISH ADMIRAL *in* AIR *With Zambeccari*—1785

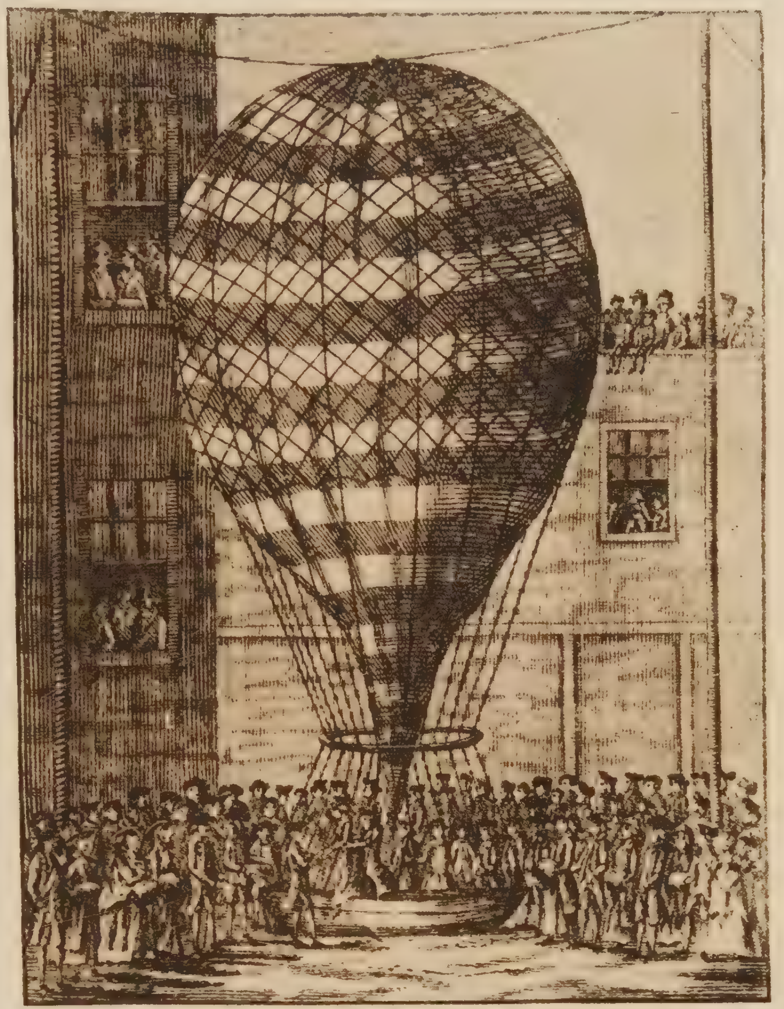
THE Intrepid Italian, Count Zambeccari, whom we have already noted, now reappears and takes into the air the first English admiral to ascend in a balloon.

Zambeccari (January, 1785) appears with a balloon which he claims to be "a striking superiority over every other construction of the kind exhibited in Great Britain." He offers to ascend in company with "a Gentleman of the first distinction" and a lady, if one dared accompany him.

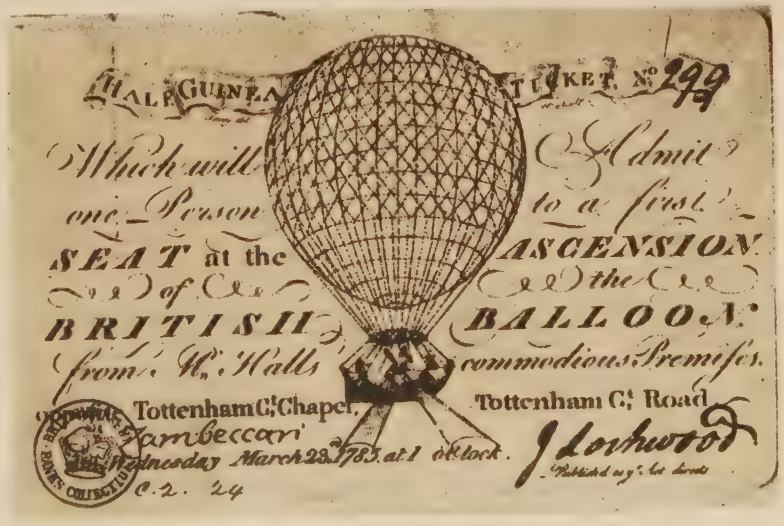
His ascent took place (March 23, 1785). Again a great London throng assembled—this time in Tottenham Court Road. Admiral Sir Edward Vernon and a Miss Grist entered the gondola with Count Zambeccari. The "lift" of the balloon was insufficient to carry all three and Miss Grist stepped out.

The Count's balloon then rose rapidly—and soon was far above the clouds. They claimed to be the first balloonists to go that high, and the first to pass through the clouds in a snow storm. In less than an hour they came down safely in Sussex—about 35 miles from London.

Monument (below) erected by the French to mark spot in Guines Forest, near Ardres, where Blanchard and Jeffries landed.



WOOD ENGRAVING IN THE BRITISH MUSEUM—This Eighteenth Century Wood Engraving (above) shows Count Zambeccari's Balloon about to ascend from Tottenham Court Road. Admiral Vernon is assisting Miss Grist from its gondola, because the lifting power of the gas bag has been found sufficient only to carry Count Zambeccari and himself. Zambeccari ticket (below) is in the Banks Collection.



HALF GUINEA TICKET No 299

Which will Admit

one Person to a first

SEAT at the ASCENSION

of the

BRITISH BALLOON

from W. Halls commodious Premises.

Tottenham Ct Chapel, Tottenham Ct Road

Zambeccari

Wednesday March 23. 1785. at 1 o'clock.

J Lockwood

C.2. 24

BANKS COLLECTION

STRIKING *Balloon* FLIGHTS *by Lunardi and* DEEKER—1785

LUNARDI BALLOON ASCENT—ST. GEORGE'S FIELDS
Original Oil Painting in the London Museum.

DEEKER'S BALLOON (Below)

HERE we meet Lunardi again in spectacular feats (above). And, James Deeker—whom we met at Dover while he was assisting in the inflation of Blanchard's Cross-Channel Balloon.

Deeker "sold experimental balloons (of his own make) at 59 Berwick Street, Soho, London, at prices ranging from 5 shillings for one 3 feet in diameter, neatly gilt, and gas for the same threepence, to 2 guineas for a 12-foot size, gas 5 shillings."

He made two balloon ascensions in Norwich, England (June, 1785). Deeker's "Royal Balloon" was ornate as to car and seemed well able to take two passengers into the air. He invited a Miss Weller of Norwich, a girl of 14 years, to accompany him on his first ascent. Shortly before the ascent a violent storm tore the balloon's envelope, permitting escape of gas. Miss Weller had to be left behind—before the balloon would rise.

Deeker—alone—rose rapidly in the lightened balloon. He got into difficulties with the torn envelope, which he tied together with a handkerchief. The balloon fell very fast! Deeker was now without ballast—but by hanging to its hoop, he landed safely about ten miles away from Norwich. His second ascent was no more distinguished, but he came through it safely—alone.

Soon, we shall find another Deeker in America. We shall read his proclamations and witness his attempt to make the First Flight in the Western Hemisphere—and meet with failure. Old engraving (by Neele) frontispiece to Edward Rigby's *An Account of Mr. James Deeker's Two Aerial Expeditions* (1785).

FIRST ATTEMPT *to Cross* IRISH SEA—POTAIN—1785

POTAIN—ADVENTUROUS FRENCHMAN IN IRELAND

IRELAND now comes forward, with a daring attempt to cross the Irish Sea (St. George's Channel) in a balloon (June 17, 1785). In January of this year the first balloon in Ireland had taken the air.

Dr. Potain, a Frenchman practising medicine in Dublin, now essays to cross from Ireland to England in a balloon. His was the second attempt in the air over this body of water. The car of wickerwork was covered with a heavy oilcloth in the effort to render it sufficiently waterproof to remain afloat.

There were wings and a rudder, and a propeller of sorts, on Potain's balloon, which is pictured on the tickets to his ascension as quite a handsome affair. The doctor, also fitted a net attached within the car, so that he could climb into this and cut loose the boat-shaped car if he found it necessary.

A week ahead Dr. Potain sent notice of his intention to "all owners of Fishing Vessells and Sea Boats" in nearby harbors, both in Ireland and England, bespeaking their assistance in case of need.

But the prevailing wind on the day of ascent carried him away from the sea instead of in his desired direction. He landed in the mountains of Mullinaveague, near Powerscourt, about 16 miles from Dublin, after an hour in the air.

The aeronaut could not speak English, but when he cried "Potain! Potain!" the well-informed natives knew perfectly who he was and assisted him with much cordiality.

Portrait engraving of Dr. Potain (in Bella C. Landauer Collection, New York) is frontispiece of book on his Irish experiences, published by him years afterward when living in Paris.

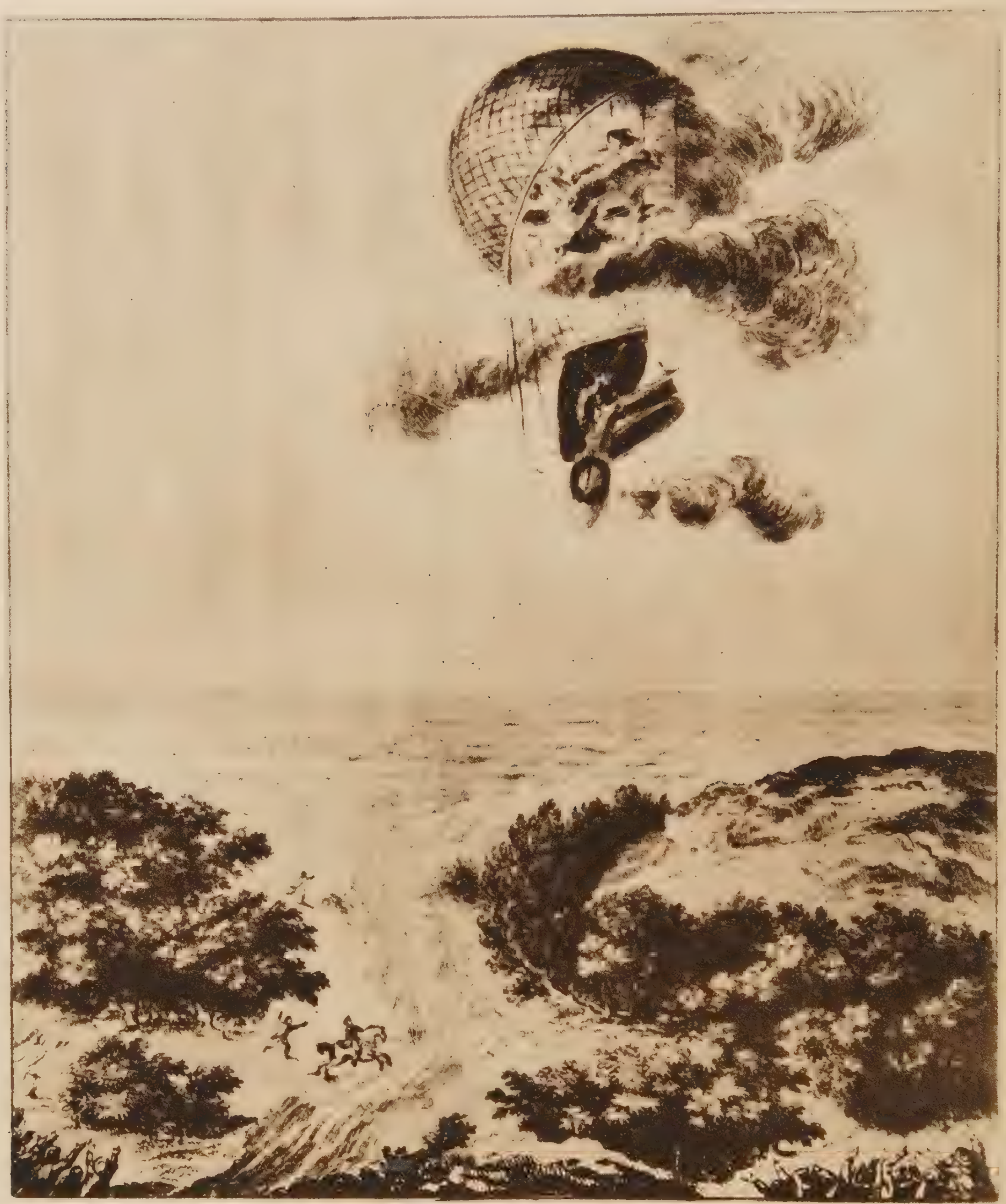
THE "FIRST Female Aerial Traveller in the English Atmosphere" now appears in the record—the entrancing Mlle. Simonet, a young French girl, "daughter of a dancer," (according to Horace Walpole)—and herself an actress.

Mlle. Simonet dared to ascend with Blanchard (May 3, 1785) from Barbican. It was a day of still airs, this May day when for the first time in England a woman sailed heavenward in a balloon car. Though at the outset frightened, she stood the novel experience very well.

Blanchard, now back from France and his triumphant crossing of the English Channel, is making further ascents in England. He boasted that with Mlle. Simonet, he landed on "the very spot from which he first set out"—but failed to say that he would have landed some distance away had he not been "towed" back by ropes dropped from his balloon. Four days later Blanchard made another successful ascent from Barbican but Mlle. Simonet was not with him.

This rare engraving of Mlle. Simonet in the character of "Skirmish" in "The Deserter" is by Michael Angelo Pergolezi, in Bella C. Landauer Collection.

FIRST GREAT TRAGEDY *of the* AIR—*Death of De Rozier*—1785



FALLING
from
CLOUDS
in
BURNING
BALLOON
in
Famous
Collection
of
CHARLES
DOLLFUS
(Paris)

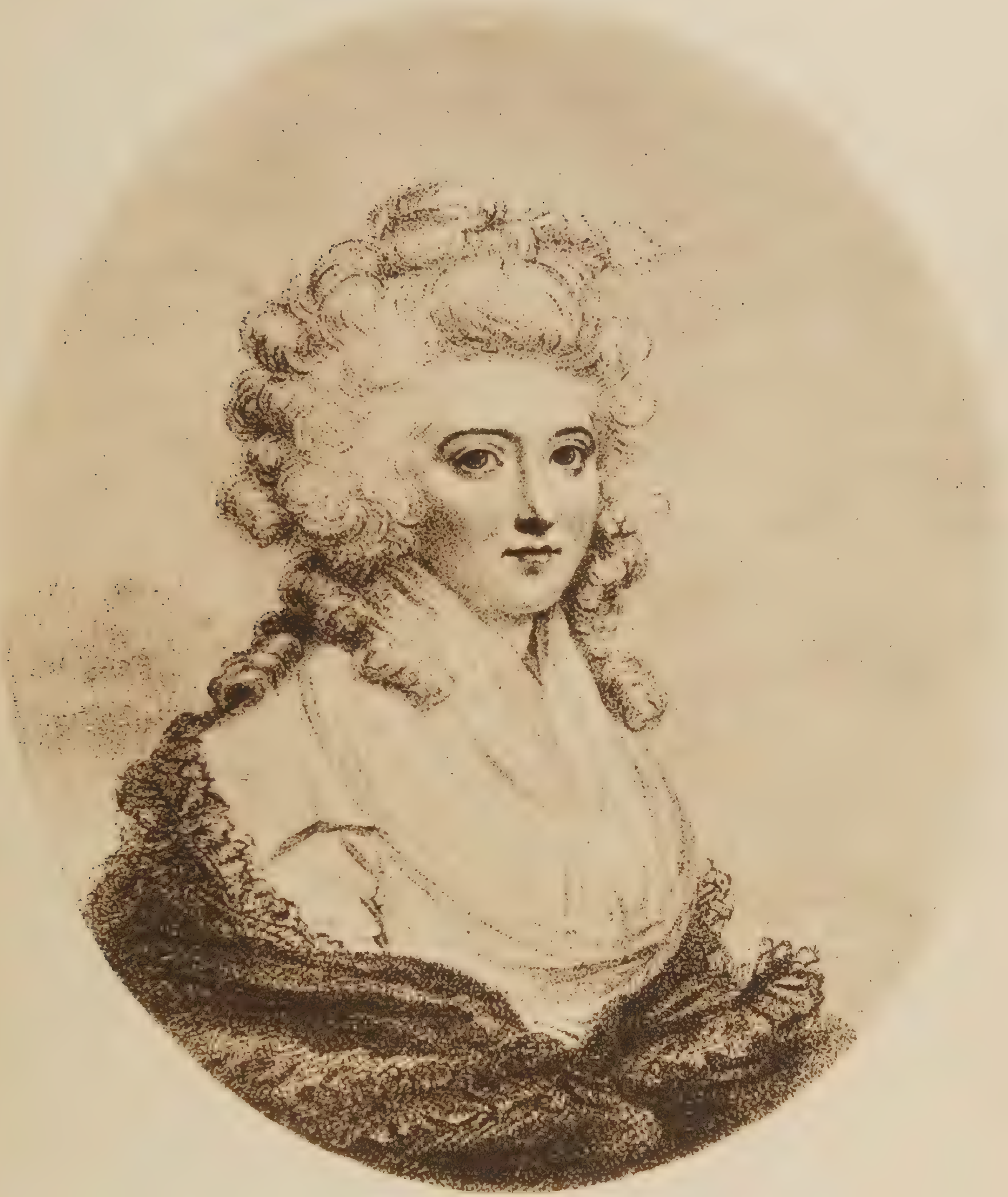
PORTRAITS
of
de ROZIER
and
ROMAIN
(Below)

WORLD'S FIRST AERONAUT A MARTYR! The Science of Aerostation was but a year and a half old when the Grim Reaper struck down out of the sky its first martyrs. Jean-Francois Pilatre de Rozier, youthful and brilliant French scientist, first to pilot a "Ship" into the ethereal blue (November, 1783), and his friend, Monsieur Romain, became the first victims of the new art.

Attempting to cross the English Channel from France to England (June 15, 1785), the disaster stunned Europe. Their composite aerial craft combined a 40-foot hydrogen balloon with a 10-foot hot air balloon suspended beneath—to overcome the Blanchard crisis when he first crossed from England six months before.

Fifteen minutes after leaving Boulogne their entire apparatus burst into flame—3,000 feet in the air. Friends hurried to where they fell. De Rozier, every bone in his body broken, was dead. Romain expired immediately. De Rozier, but twenty-eight, was recently affianced to a lovely English girl, Miss Susan Dyer, who was watching the flight. Prostrated by the catastrophe, she died of a broken heart in eight days.

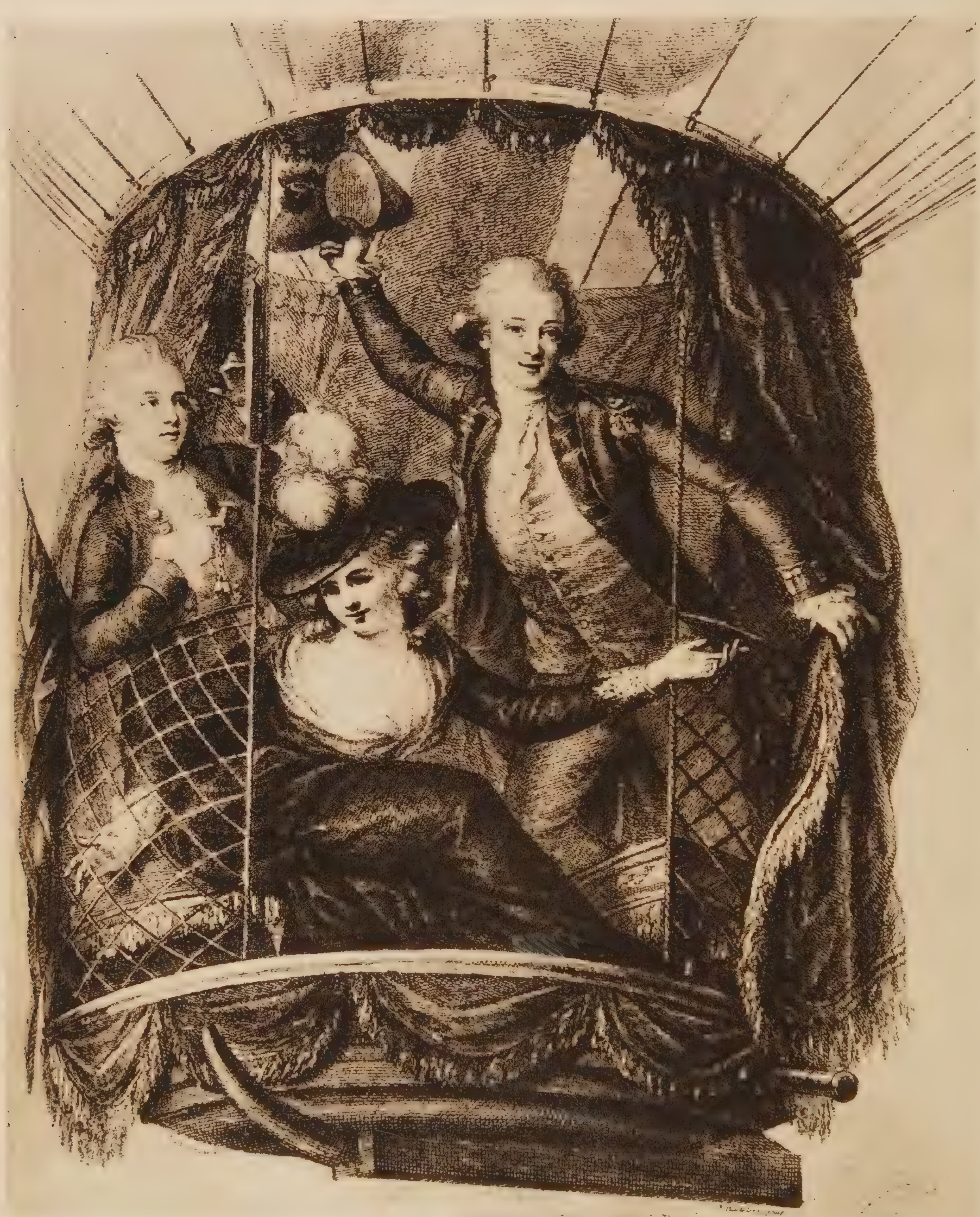
FIRST ENGLISH WOMAN *to* ASCEND *in* BALLOON—1785



Painting of Mrs. L. A. Sage

Engraving by Burke—After Painting by SHELLY—Story on Page 191

Courageous WOMAN *Astounds* BRITISH SOCIETY—1785



FIRST ENGLISHWOMAN STARTS ON AERIAL VOYAGE WITH BIGGIN AND LUNARDI

In the car of Lunardi's Balloon at St. George's Fields, London, when the First Englishwoman to Ascend in a Balloon makes her aeronautical debut (June 29, 1785). British flags waving—Throngs cheering—Society in a furore over the "shocking adventure." This Engraved print by Bartolozzi is in the British Museum.

"FEMALE AIR TRAVELLER" *Writes* ADVENTURES—1785

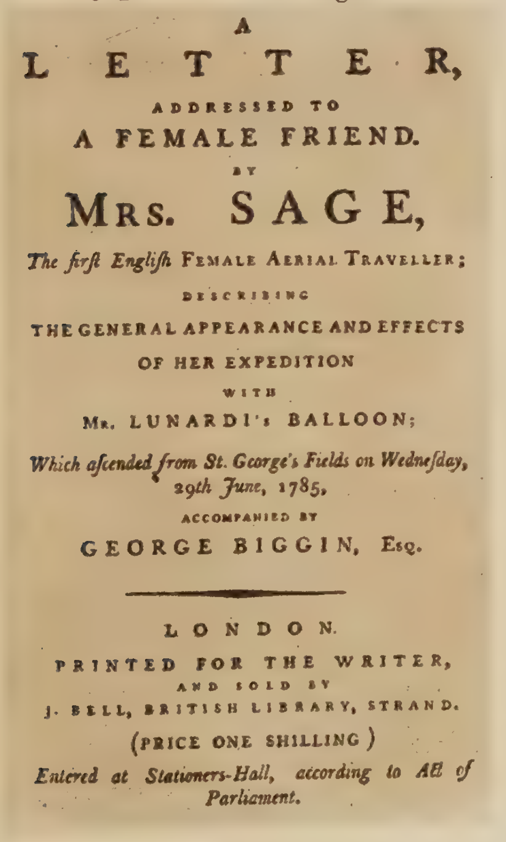
THE ROMANTIC STORY of the beautiful Mrs. Sage would make a book in itself—in truth, she wrote one.

We have seen how the gallant and dashing young Lunardi, the "black-eyed Italian" first Secretary of the Neapolitan Embassy in London, became the social lion of the day. In homage to the beauty of Mrs. Sage, he sought the honour of taking her into the "blue Paradisian skies."

The "reigning Queen" was thrilled with the romantic proposal. Their mutual friend, George Biggin, distinguished Etonian, was to accompany them. The scene was set for a sunlit day in May—but the balloon failed to rise with the weight of three persons and Lunardi was forced to ascend alone.

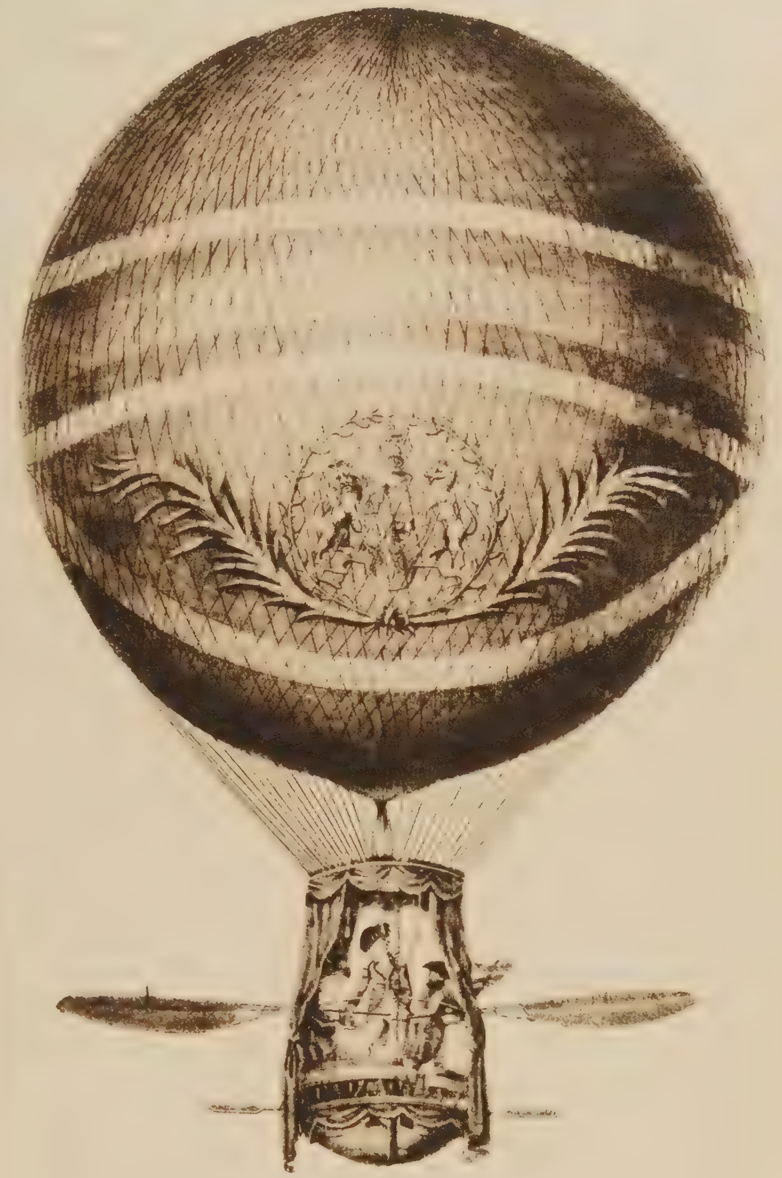
The great day now arrives (June 29, 1785) at St. George's Fields, Newington Butts. The conditions seem favorable. Young Lunardi, as host, invites four guests for this first social event in the Air.—Mrs. Sage and Biggin, Colonel Hastings and a lady unnamed—with Lunardi—five on a gay lark in the skies. The magnificent "Air Carriage" was richly embellished and decorated.

The balloon failed to rise. Colonel Hastings and lady withdrew—it still failed to rise. The gallant young Lunardi in a grand gesture of courtesy stepped out—and the great carriage rose with Biggin, of Eton, and the glorious Mrs. Sage. Thus, Biggin "man of means and one of the best gentleman chemists in England," was his own pilot in his first voyage—with Mrs. Sage.



A
LETTER,
ADDRESSED TO
A FEMALE FRIEND.
BY
MRS. SAGE,
The firſt Engliſh FEMALE AERIAL TRAVELLER;
DESCRIBING
THE GENERAL APPEARANCE AND EFFECTS
OF HER EXPEDITION
WITH
MR. LUNARDI'S BALLOON;
Which aſcended from St. George's Fields on Wedneſday, 29th June, 1785,
ACCOMPANIED BY
GEORGE BIGGIN, Esq.

LONDON.
PRINTED FOR THE WRITER,
AND SOLD BY
J. BELL, BRITISH LIBRARY, STRAND.
(PRICE ONE SHILLING)
Entered at Stationers-Hall, according to Act of Parliament.



LUNARDI'S SECOND HISTORIC BALLOON
Aquatint by Jones in the British Museum

Lunardi, bowing graciously, bid "Bon Voyage" from the ground to Biggin and his lady. The balloon, with its distinguished passengers, passed over the city of London to the Thames river. It crossed and recrossed the Thames several times—an hour in the air—finally coming down near Harrow, home of a leading rival of Biggin's school, Eton.

Mrs. Sage alighted from the journey in her graceful manner and Biggin, who had proved a master of balloon pilotage, was about to re-ascend alone when the irate farmer in the midst of whose crops it had come to earth, arrived to press a demand for a settlement of damages.

Mrs. Sage is authority for the statement that it was the charming boys of Harrow School, who came running up in numbers, who saved the balloon from destruction at the farmer's hands. The affair was finally adjusted and the balloon sent back to London. Mrs. Sage and Biggin were entertained at the school before starting their own drive back that evening.

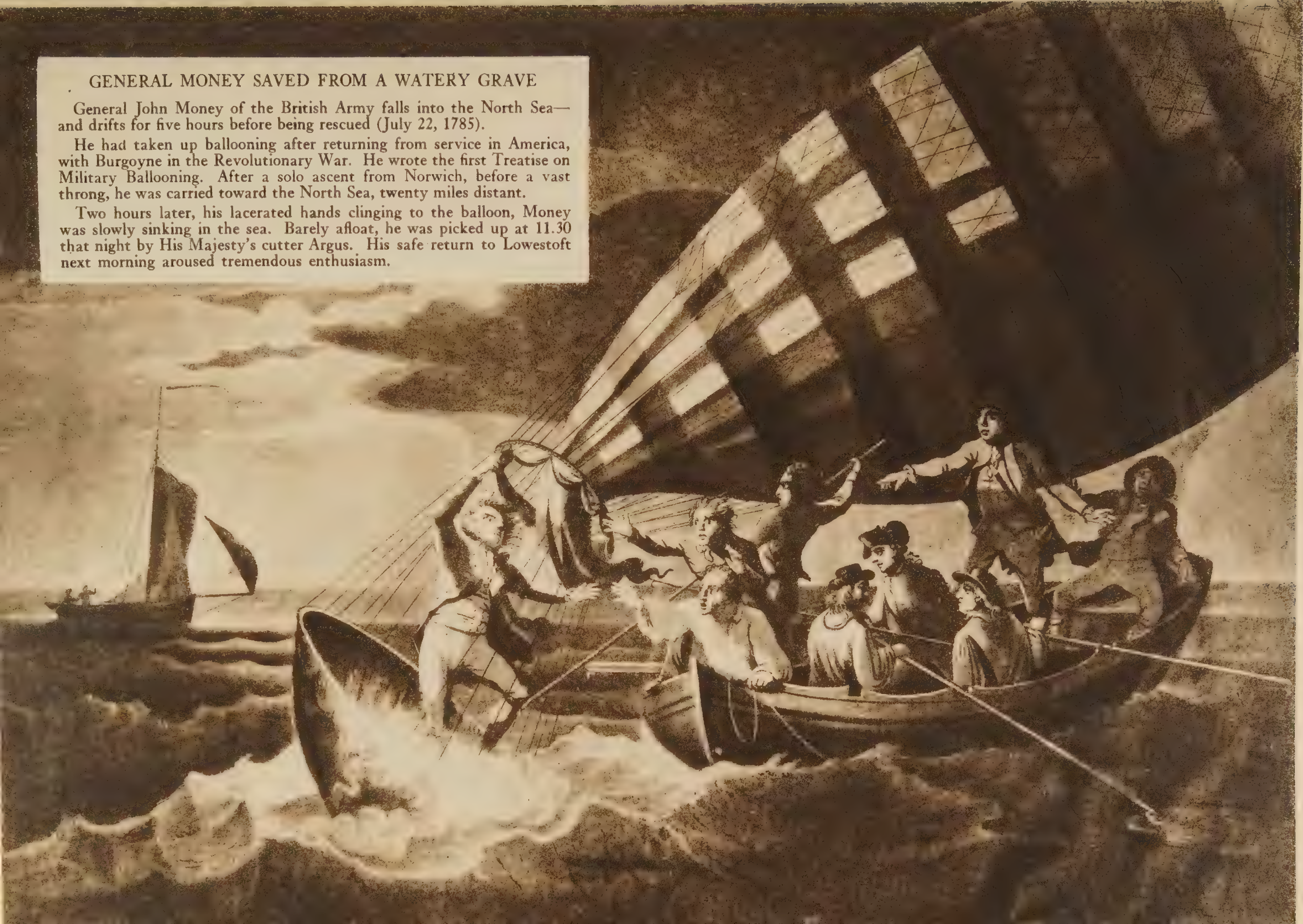
SIR RICHARD McGUIRE SAVED BY LORD HENRY FITZGERALD IN IRISH SEA—The first Irish aeronaut, Richard Crosbie, tried a second ascent from Dublin (May 12, 1785) but his "Aeronautic Chariot" only carried the heavy Crosbie over adjacent housetops and quickly came down. Crosbie alighted safely, when a young officer, Richard McGuire, sprang into its car, tossed out some ballast, rose gloriously and was soon traveling eastward over the Irish Sea towards England. About nine miles from land the balloon began to fall—and McGuire was plunged into the sea. But, knowing his inexperience, Lord Henry Fitzgerald was following in a wherry and soon rescued the young gallant. The Duke of Rutland, Lord Lieutenant of Ireland, knighted McGuire.

GENERAL MONEY SAVED FROM A WATERY GRAVE

General John Money of the British Army falls into the North Sea—and drifts for five hours before being rescued (July 22, 1785).

He had taken up ballooning after returning from service in America, with Burgoyne in the Revolutionary War. He wrote the first Treatise on Military Ballooning. After a solo ascent from Norwich, before a vast throng, he was carried toward the North Sea, twenty miles distant.

Two hours later, his lacerated hands clinging to the balloon, Money was slowly sinking in the sea. Barely afloat, he was picked up at 11.30 that night by His Majesty's cutter Argus. His safe return to Lowestoft next morning aroused tremendous enthusiasm.

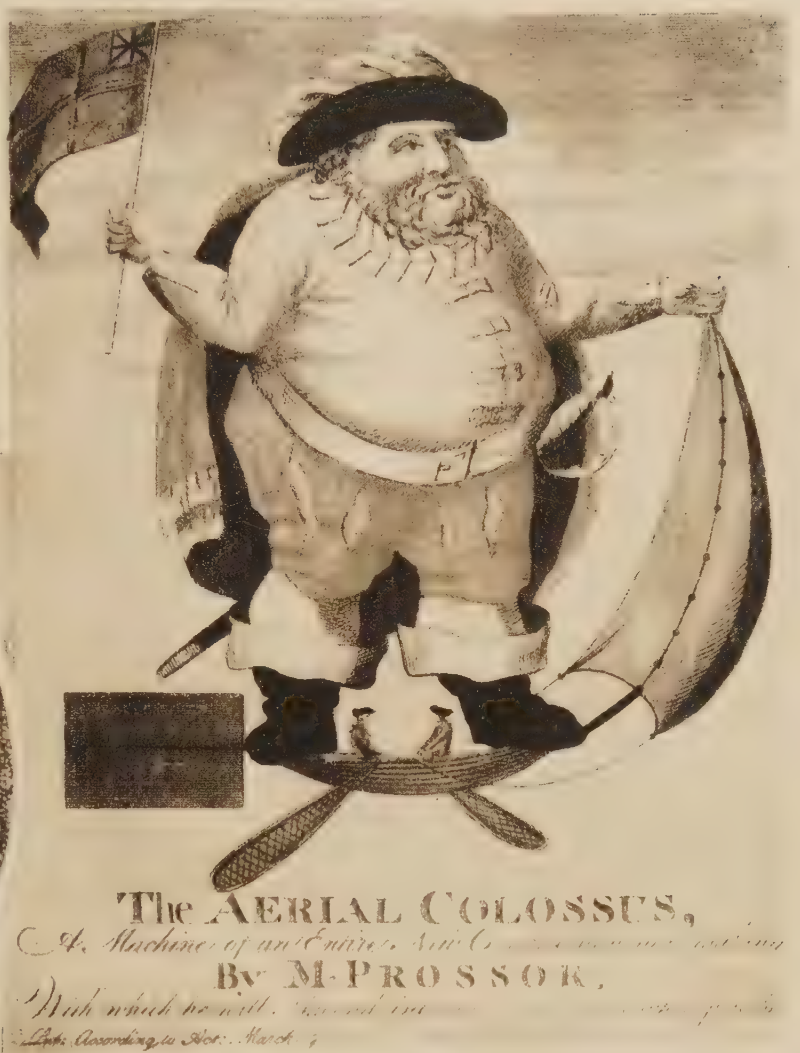


GENERAL
JOHN
MONEY
ADRIFT
IN THE
NORTH
SEA
(1785)

AERIAL COLOSSUS *and* ARNOLD *in England* · 1785

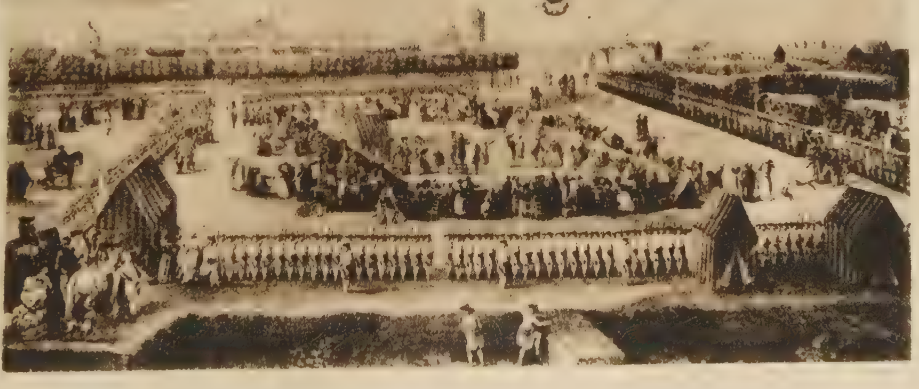
STUART AMOS ARNOLD, retired purser, British Navy, now managing St. George's Fields, London (1785), planned a Balloon Voyage from London to Paris. Finally he substituted a parachute descent from a balloon, which would have been the first in England

Arnold, with his son and one Appleby, sailor parachutist, attempted this ascent (August 31, 1785). Appleby was seated in the parachute basket. The parachute caught in a fence, checking the balloon—and was cut away. The balloon struck a cart and Arnold and all ballast fell out. Young Arnold thrilled the multitude by ascending, hanging to the broken cords. The balloon burst and the boy fell, unhurt, into the Thames River near Rotherhithe.


The AERIAL COLOSSUS,
A Machine of an Entire Air C
By M·PROSSOR,
With which he will
Pub: According to Act: March

"The Aerial Colossus" of M. Prosser (1785)—A proposed Dirigible Balloon designed to represent Sir John Falstaff, "36 feet high and 69 feet 'round the waist." From records of British Patent Office.

Blanchard was by now (1785) back in France from England — thrilling great crowds by his ascensions all about his native land. His fourteenth ascent was made at Lille, in Flanders (August 26, 1785), when he was accompanied into the clouds by the Chevalier Lepinard before a great assemblage. Engraved print (right) by Helman after original painting by L. Watteau in the Lille Museum.



MUNCHAUSEN *Relates His* STRANGE ADVENTURES—1785

AND here comes Baron Munchausen (1785), "most illustrious liar in history"—to give the balloon still greater distinction.

The Baron (take his word for it) flew to the moon and to the dog star; he flew all over the globe (sometimes on the backs of great birds and sometimes in remarkable aerial contrivances); he used a balloon to raise a great ship and lost it again beneath the waves.

Baron Munchausen's Narrative of His Marvellous Travels and Campaigns in Russia came out in London (1785) as a shilling book of 49 pages.

Edition after edition followed and it was translated into many languages. It was a well written, engaging collection of hilarious dream stuff, which now and then seemed to travesty something in contemporary life.

A *Sequel* appeared (1792) dedicated to James Bruce, the African traveler, which carried Munchausen to still more breath-taking heights. Years afterward, fresh editions of Munchausen were being published; and many famous illustrators have tried to portray the audacious situations with which Munchausen taxed the credulity of his readers. Gustave Dore is the most noted of the Munchausen artists.

Rudolph Erich Raspe (1737–1794) was the creator of Munchausen. This was not discovered for nearly forty years—when the biography was published of its German translator, Burger. Raspe was a Hanoverian who studied at Gottingen and Leipzig. He had known Freiherr von Munchausen in Gottingen, who had served with Russia against the Turks and told tall tales of his experiences. Years after in London, Raspe made use of this material and added to it. He died at Muckross, Ireland.

GUSTAVE DORE'S CONCEPTION OF BARON MUNCHAUSEN—This is the frontispiece of an edition of Munchausen which appeared in Paris a century after the book was written. The "*Inhabitant of the Moon*" (right) and "*Inhabitant of the Dog Star*" (Page 197) are by Dore. We see the Baron (below), wearing a glass diving helmet, attach a balloon to the sunken Royal George—we see him raise the ship by means of the balloon (Page 197).

An Inhabitant of the Moon.

The BARON's Preparations for raising the Hull of the Royal George at Spithead

His Startling FLIGHT *Over* FOUR CONTINENTS—1785

MUNCHAUSEN, staying with a relative on the Island of Thanet, made a remarkable "Aerial Voyage half way around the world and return—within 36 hours."

Walking on a mountainside, he found a narrow but very deep chasm; straddled this and dropped a stone to sound its depth.

A great eagle arose directly beneath him—and carried him away on its back. While it hovered over Margate, he was shot at.

With Munchausen it flew across the English Channel, then south till the youth saw Gibraltar beneath him. The eagle rested on Teneriffe, then with a mate flew *straight across the Atlantic to South America!*

Here they found a fruit containing gin—which made the eagles drunk. They finally were able to fly north across the Gulf of Mexico to North America and on over the American colonies and Canada to Greenland.

In eagle language, they discussed going to the North Pole, but decided against this. After other adventures they landed Munchausen at Margate again.

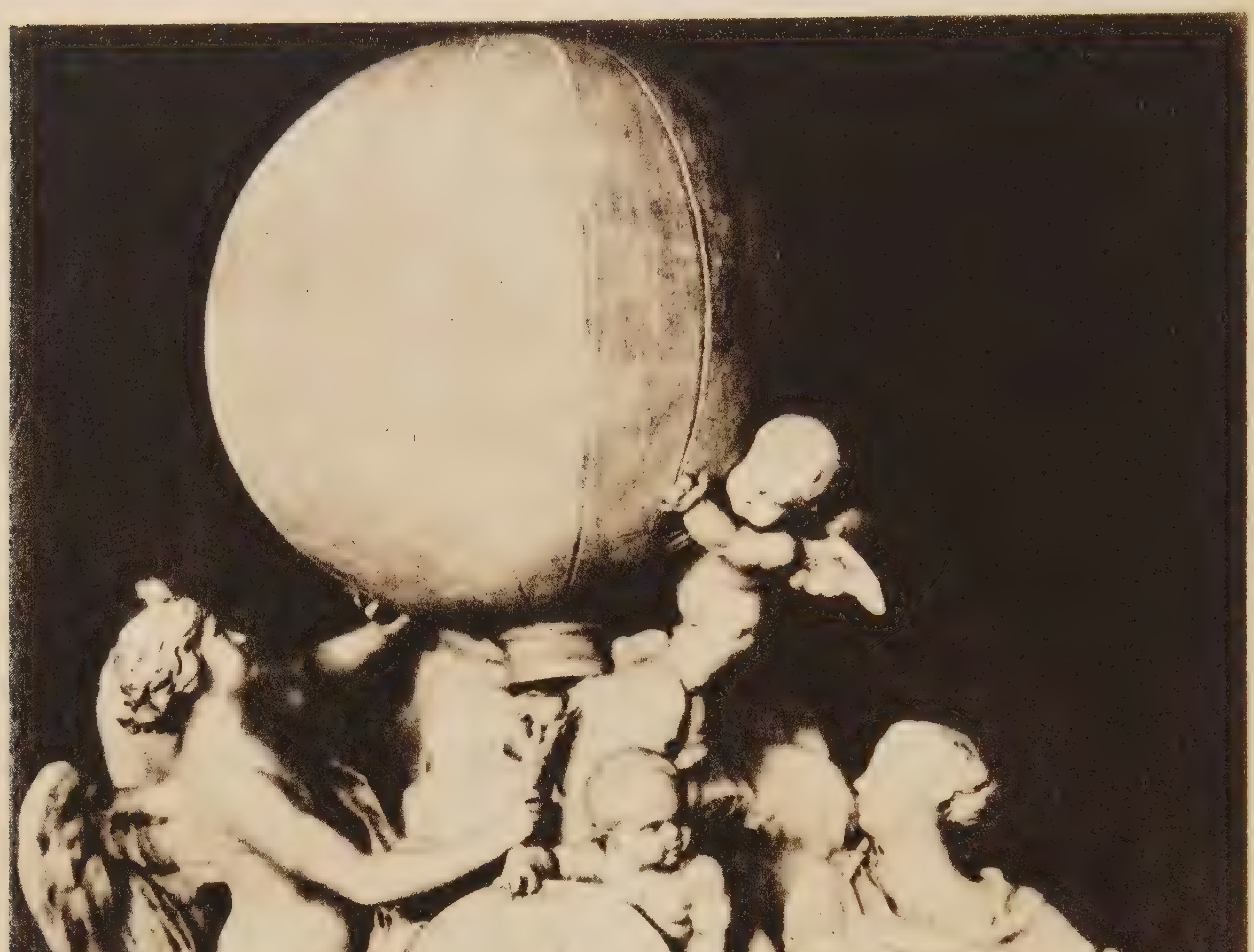
Flight from MARGATE to South AMERICA.

An Inhabitant of the DOG STAR

Baron Munchausen (below) is training a cannon on the balloon with which he has raised the ship *Royal George* from the depths of the sea into the air. The ship rose too rapidly and far too high and the Baron was compelled to shoot it down—when it at once sank again beneath the waves.

The BARON raises the Hull of the ROYAL GEORGE

LOUIS XVI *Proposes* MONUMENT *to the* MONTGOLFIERS



MEMORIAL TO THE MONTGOLFIER BROTHERS,—INVENTORS OF THE BALLOON.
Planned to be erected in Tuileries Gardens by LOUIS XVI (1785)—Model in Tissandier Collection

HISTORY-*in-the*-MAKING *in* CAPITALS *of* EUROPE — 1786

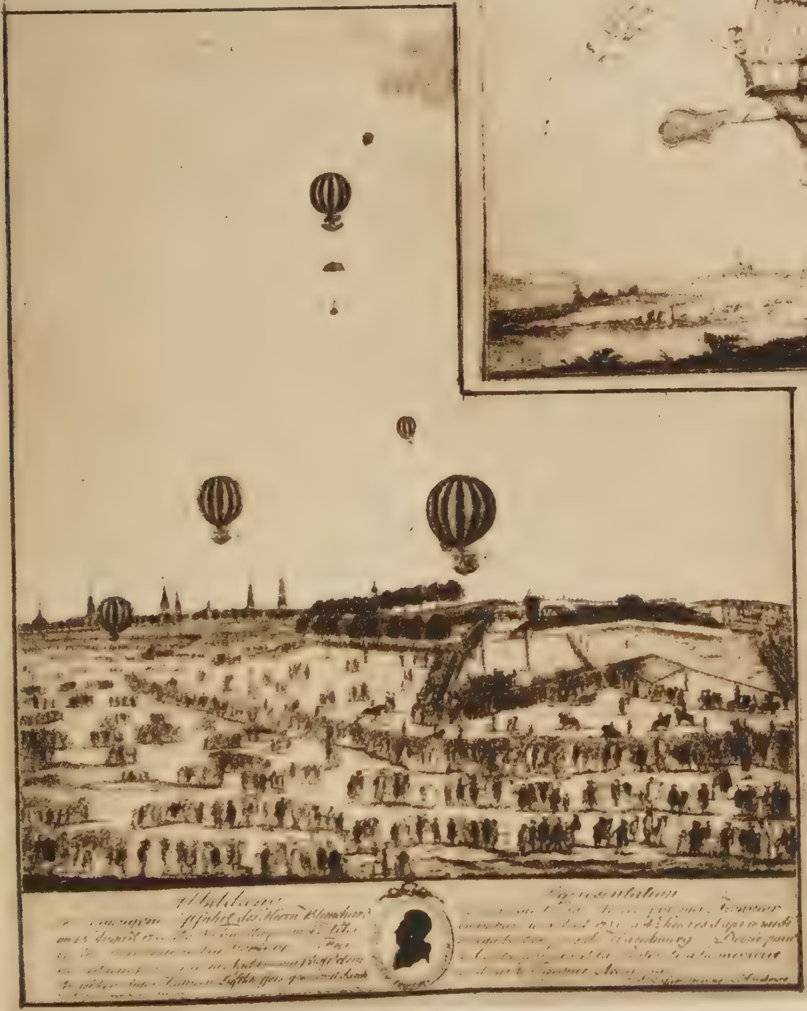
BLANCHARD, gallant and intrepid French aeronaut, did more to popularize Aerial Navigation over Europe than any other one man in its first years.

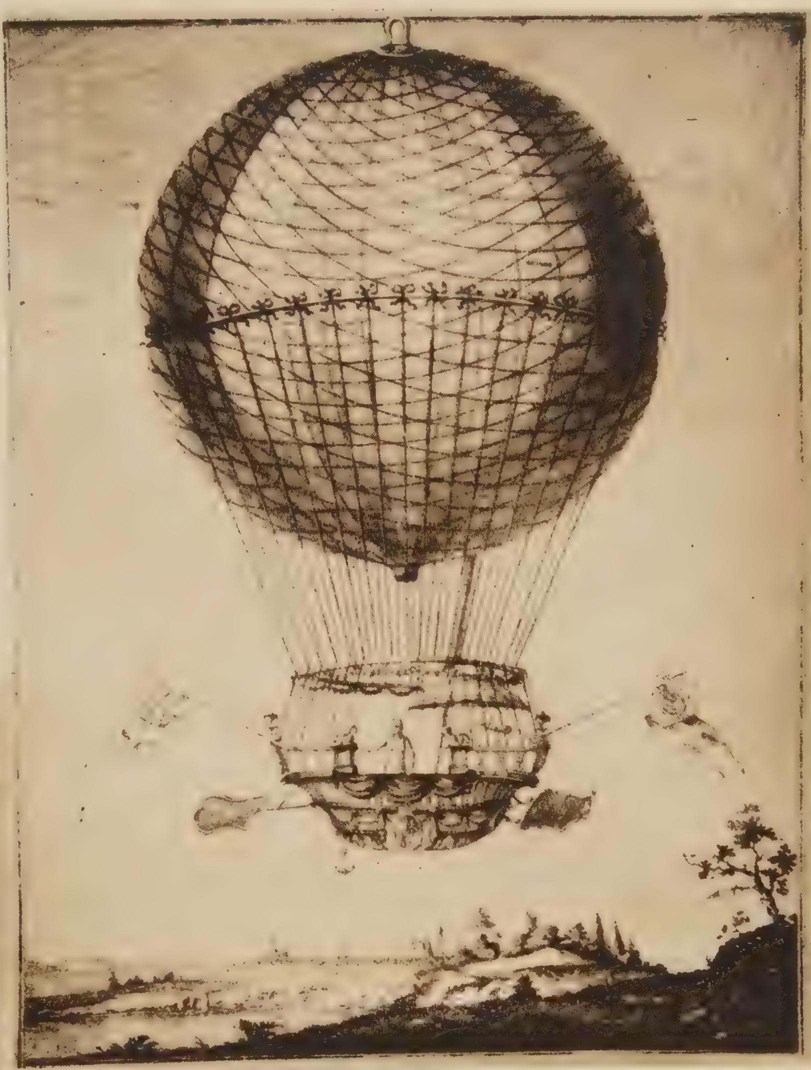
We find him leaving England (1785) after returning from the Cross-Channel Flight made by him and Dr. Jeffries, and later that year he is making flights at The Hague and at Rotterdam in Holland.

Blanchard made the First Balloon Ascension in Germany (October 3, 1785) at Frankfort.

Hamburg — Nuremberg — Leipzig — Berlin — Breslau — Prague — these cities all witnessed ascensions by Blanchard. Warsaw, Poland, and Vienna also saw him pursue his fearless way aloft.

The engraved print (below) shows Blanchard's Ascension at Hamburg, his own twenty-fifth and the first balloon ascent in that city (August 23, 1786). Colored engraving by F. N. Rolffsen—impression in Nurnberg Museum. The succession of balloons indicate Blanchard's course over the German city.





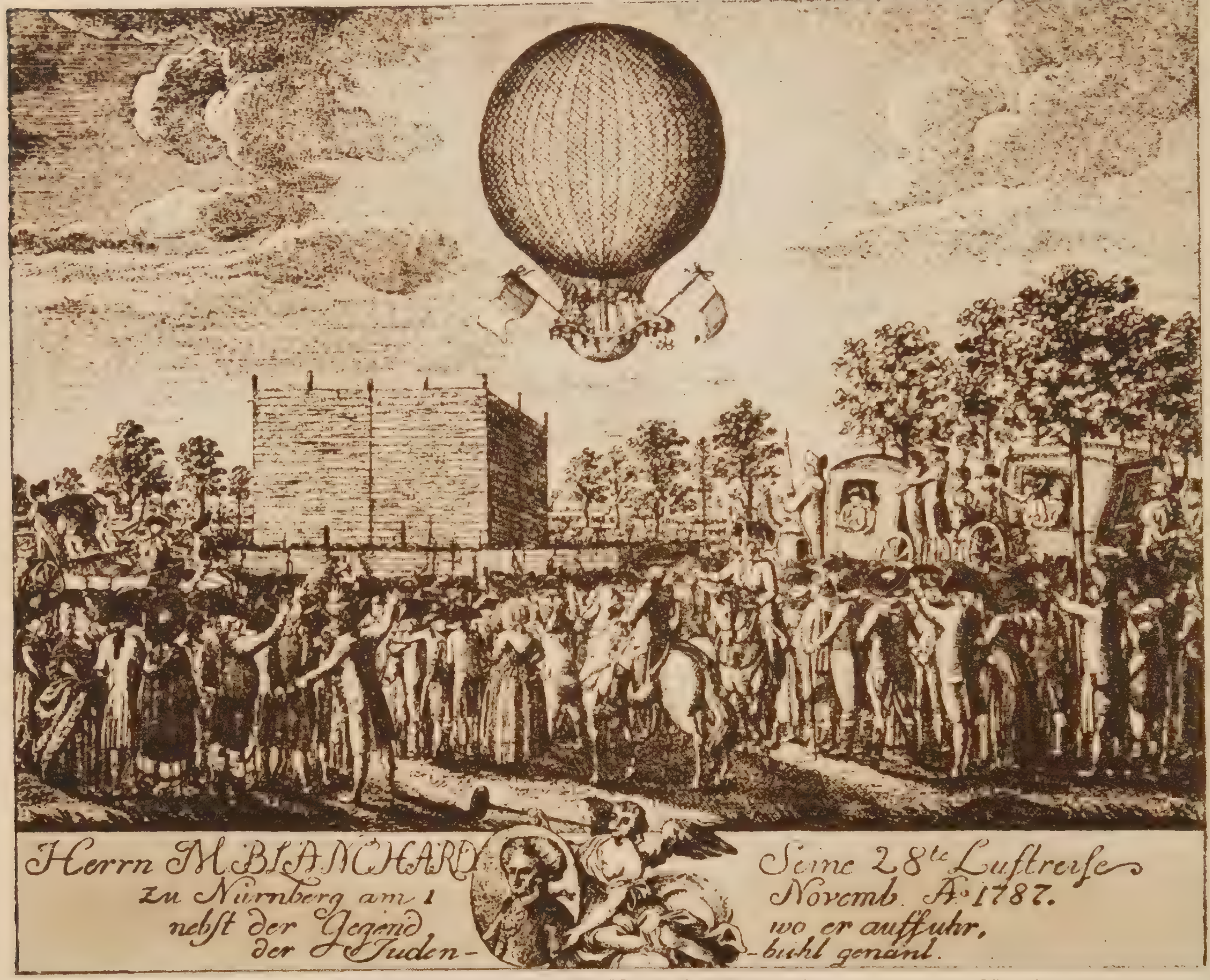
LUTGENDORF IN GERMANY (above)

THE FIRST ascension in Germany by a native (August, 1786)—when J. M. von Lutgendorf rose into the air at Augsburg in a very elaborately decorated gas balloon—brought the German nation into the Science of Aerial Navigation.

Details of the Lutgendorf ascent are lacking, and some authorities believe it to have been a failure, but the statement has come down to us in a credible way that this First German Aeronaut actually did go up in a gas balloon on this date.

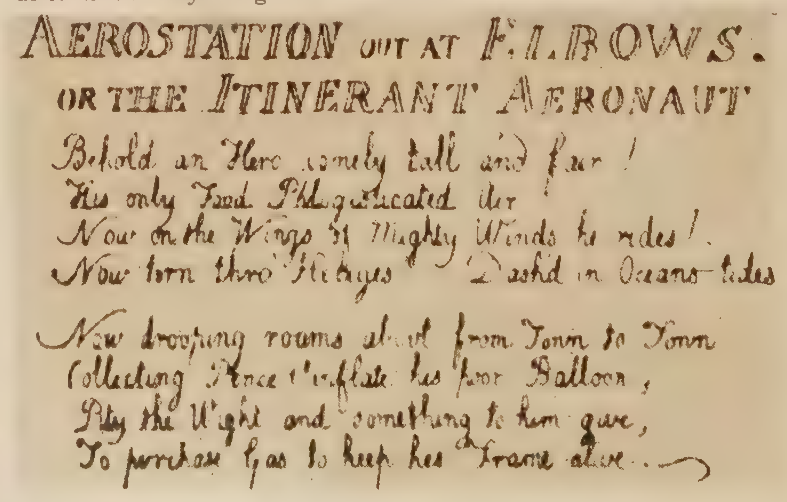
The old print (above), impression in the Nurnburg Museum, shows him in the act of ascending, with the Danube River in the background and Augsburg in the distance.

The first German experiments with a balloon are believed to have been made at Ottobeuren (January, 1784) when a Benedictine monk, Ulrich Schiegg, sent up an oblong hot air balloon made of paper. Two brothers named Bader, bookbinders, are said to have released a similar balloon at Augsburg (February, 1784).


Herrn M. BLANCHARD Seine 28te Luftreise
zu Nurnberg am 1 Novemb. A° 1787.
nebst der Gegend wo er auffuhr,
der Juden-buhl genant.

BLANCHARD, THE FRENCHMAN, THRILLS NURNBERG,GERMANY—Rare print in Nurnberg Museum.

Vincent Lunardi (left) made ascents in England, Scotland and Ireland (1785–1786) and became such a balloon rover as to bring upon himself the cartoon (verses below), which probably is satirical as to his actually being out at elbows.

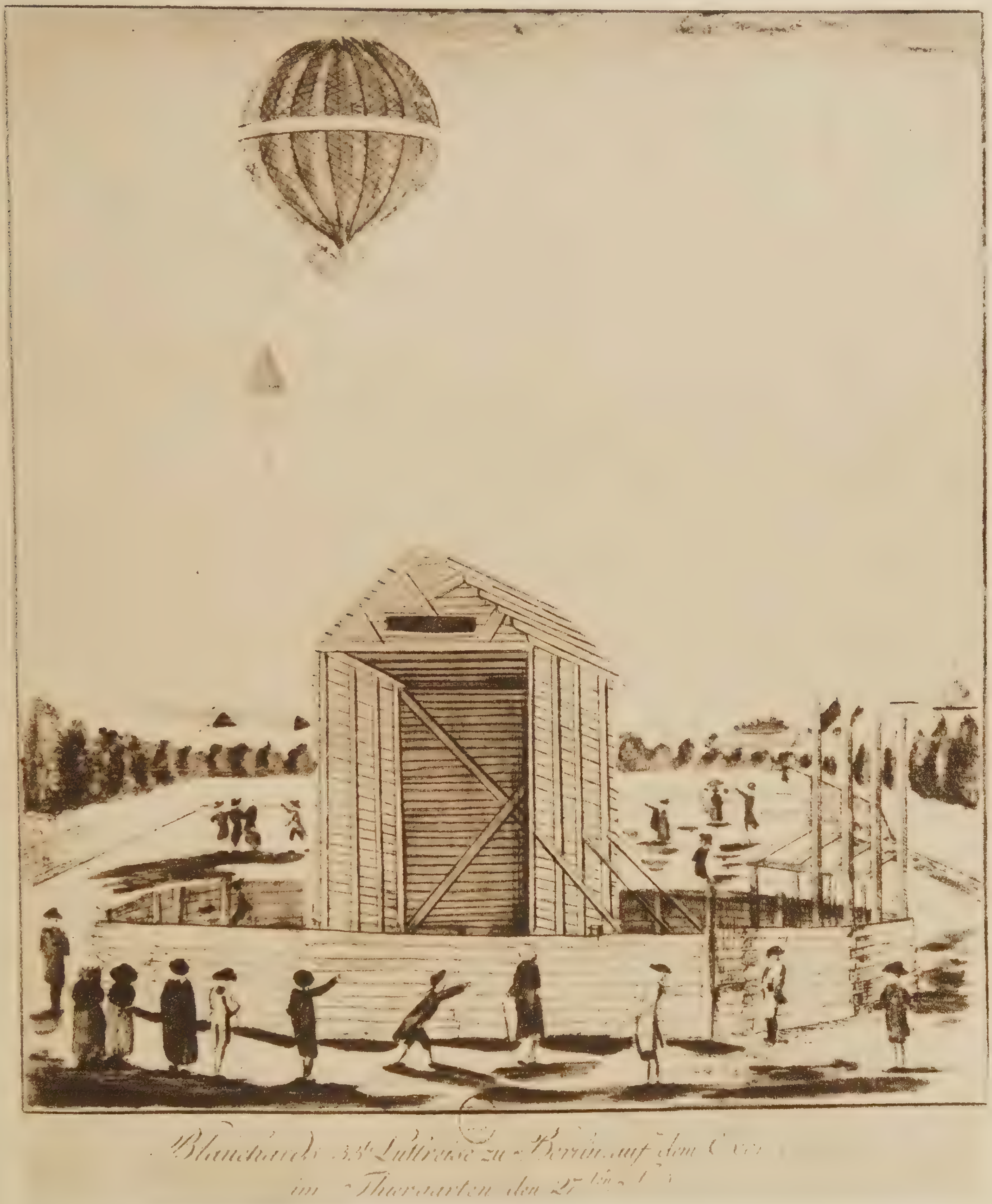


AEROSTATION OUT AT ELBOWS.
OR THE ITINERANT AERONAUT

Behold an Hero comely tall and fair!
His only Food Phlogisticated Air!
Now on the Wings of Mighty Winds he rides!
Now torn thro' Hedges Dash'd in Oceans tides

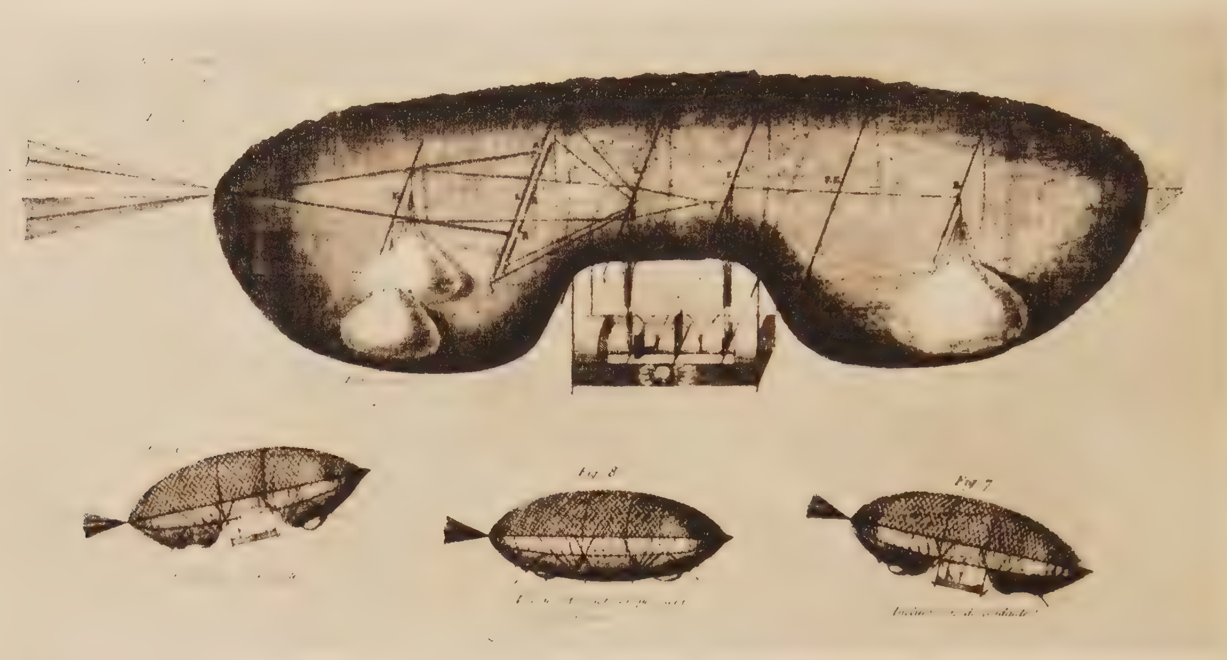
Now drooping roams about from Town to Town
Collecting Pence t'inflate his poor Balloon,
Pity the Wight and something to him give,
To purchase Gas to keep his Frame alive.

FIRST ASCENT *in* BERLIN *Inspires* GERMAN *People* — 1788


Blanchards 33te Luftreise zu Berlin auf dem
im Thiergarten den 27

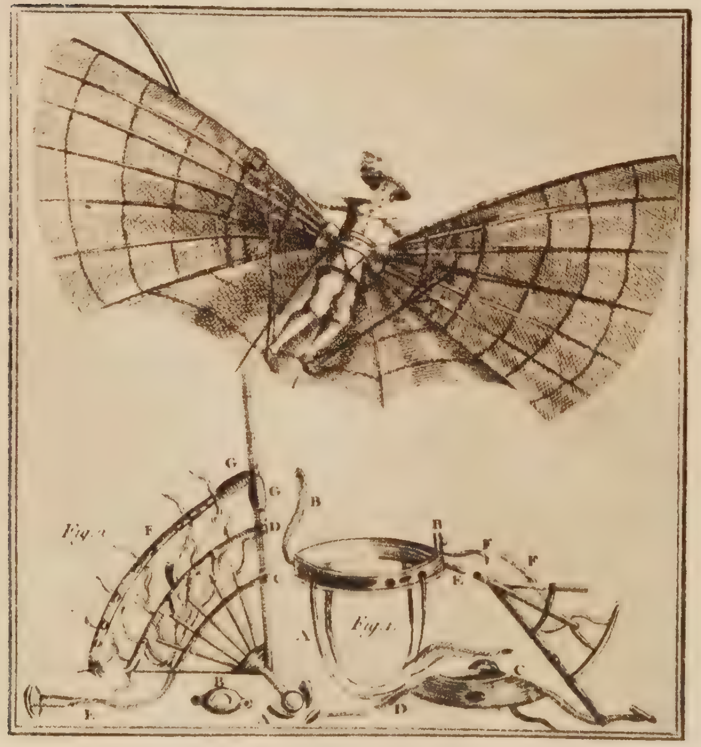
GERMANY here begins (1786) its scientific researches which eventually are to give to the world the Zeppelin—This is another of the rare prints of Blanchard, the Frenchman, in Germany in the days of Frederick the Great—This 33rd Ascent of Blanchard was made from the Tiergarten in Berlin (September 27, 1788). Original Print in the Berlin Museum.

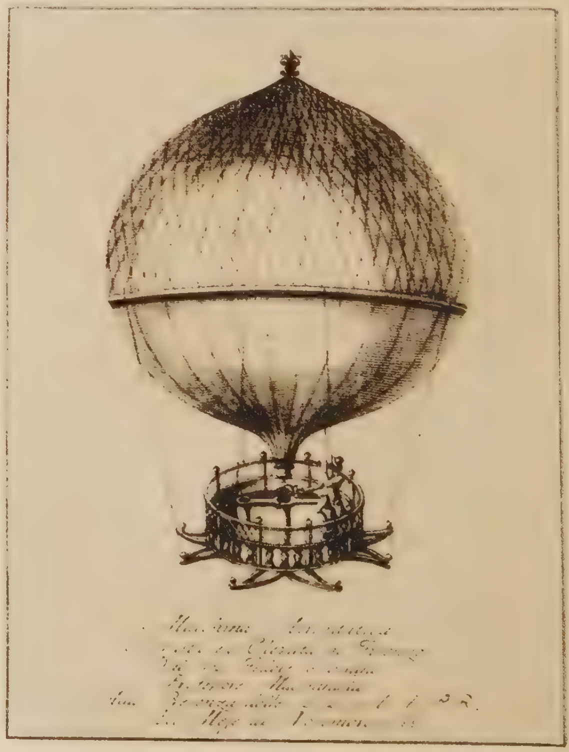
FORERUNNER *Modern* ZEPPELIN *Appears in* FRANCE--1789



BARON SCOTT, AN OFFICER OF THE FRENCH DRAGOONS, was first to use the Ballonets which characterize all dirigible airships today, and especially the Zeppelins. These small gas balloons were outside the main envelope, but could be drawn inside; they are permanently located inside today. These ballonets furnished the lift for the fish-shaped dirigible that Scott designed and described in his *Aerostat dirigible a Volonte* (Paris, 1789). The plate (above) is taken from that now exceedingly rare work. Baron Scott planned to place these ballonets in pairs fore-and-aft on his ship, and by their use incline the airship upward or downward, propelling it by oars. He never built this ship.

We present (below-right), the Aerostatic Machine built by Fedele Carmine, professor of mechanics in Florence, Italy, in which he made an ascent (November, 1788). Engraving is in the Collection of Sir David Salomans. The plate (below-left) is from *Republique Universelle* (Geneva, 1788)—showing the Flying Man of the Future.



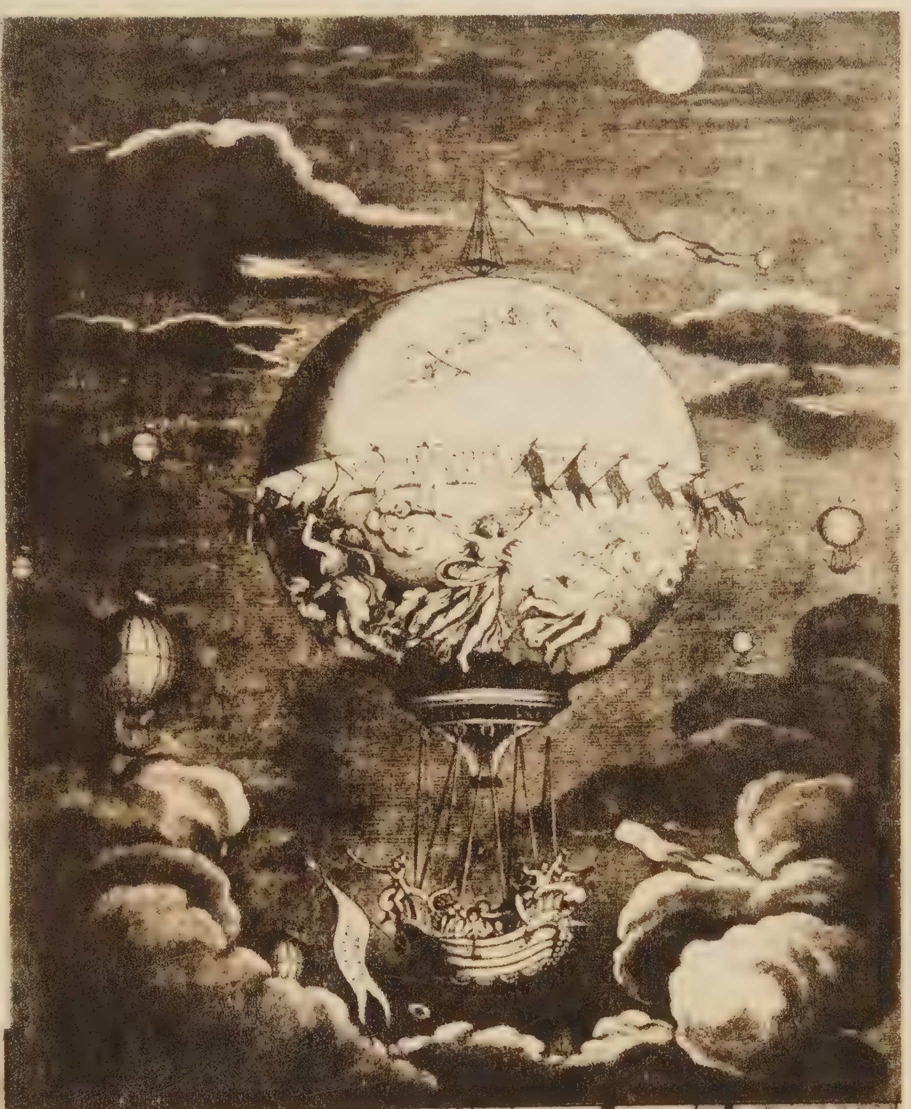


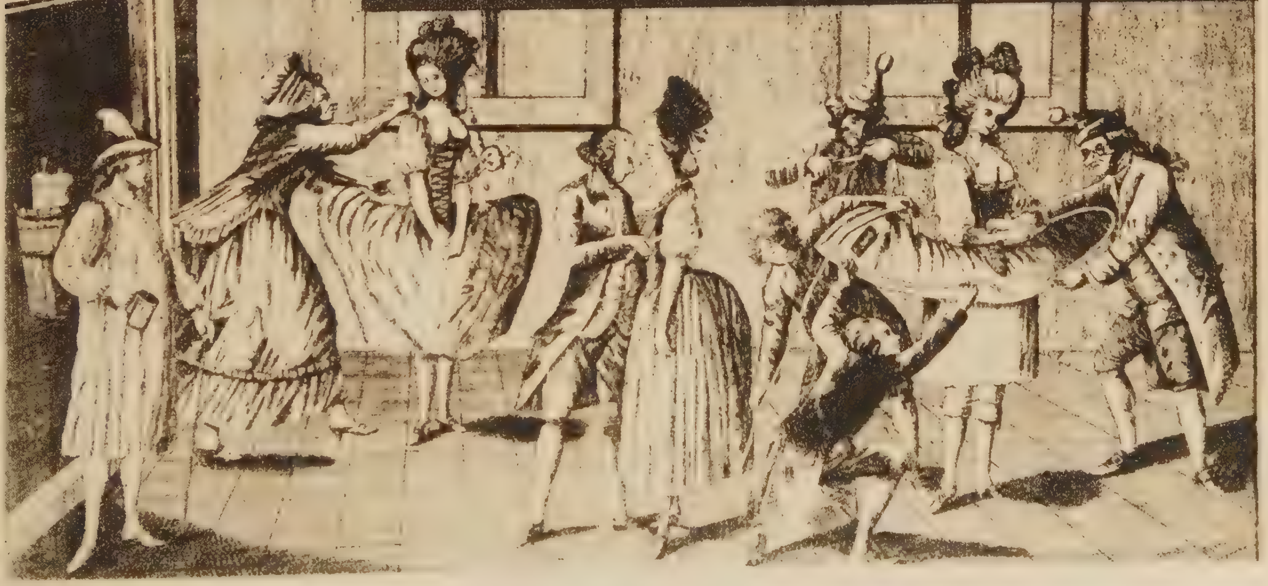
Politicians in ENGLAND *and* FRANCE *Fear "New Age"*—1789

WE COME to an eventful year in political and social progress throughout the world (1789). France is in Revolution. The States-General meets at Versailles—the National Assembly is formed. The storming of the Bastille (July 14, 1789) signalled the overthrow of the Empire.

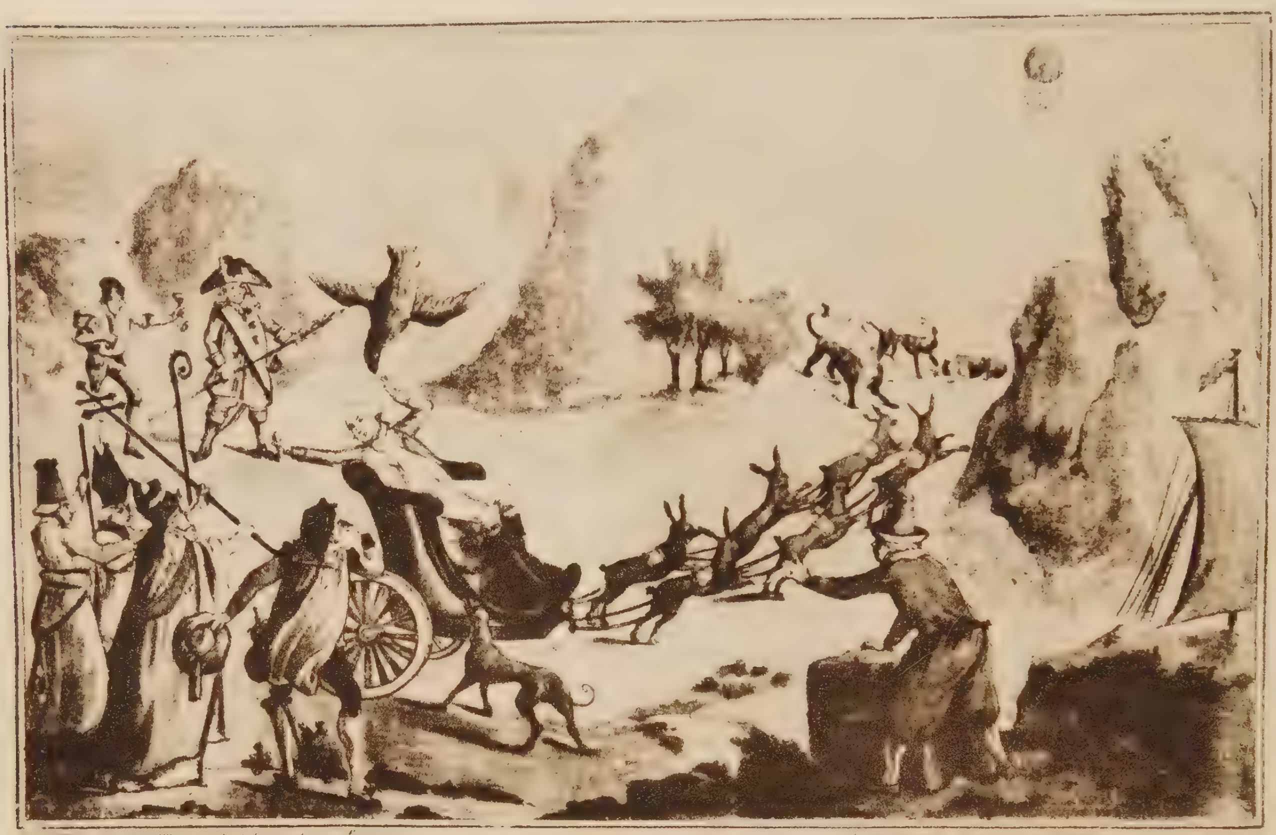
In America events march with equal power. The First United States Congress meets in New York, and George Washington is elected First President of the United States of America. The United States Supreme Court is created, with John Jay its first Chief Justice. The first ten amendments to the United States Constitution are proposed. These are stirring times of vast moment to humanity (1785).

World Events are cartooned in the terms of the Balloon. We find this Cartoon of the French Revolution (right) in Collection of Charles Dollfus in Paris. The bard of the Balloon proclaims "*Liberty, Equality, Brotherhood*—to the Death." On the waving pennant are the words: "To the Moon, dear friends!" The Satirical Viennese cartoon (below) shows "The Flying Skirt" (1790). Original in Vienna Historical Museum.

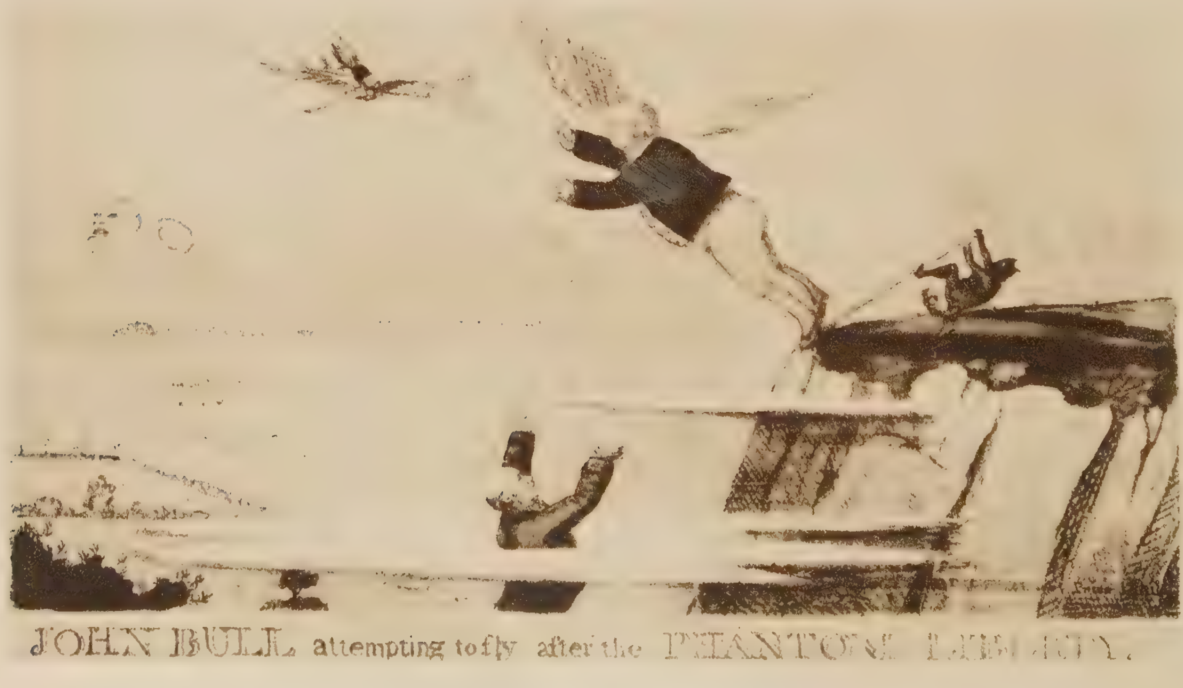




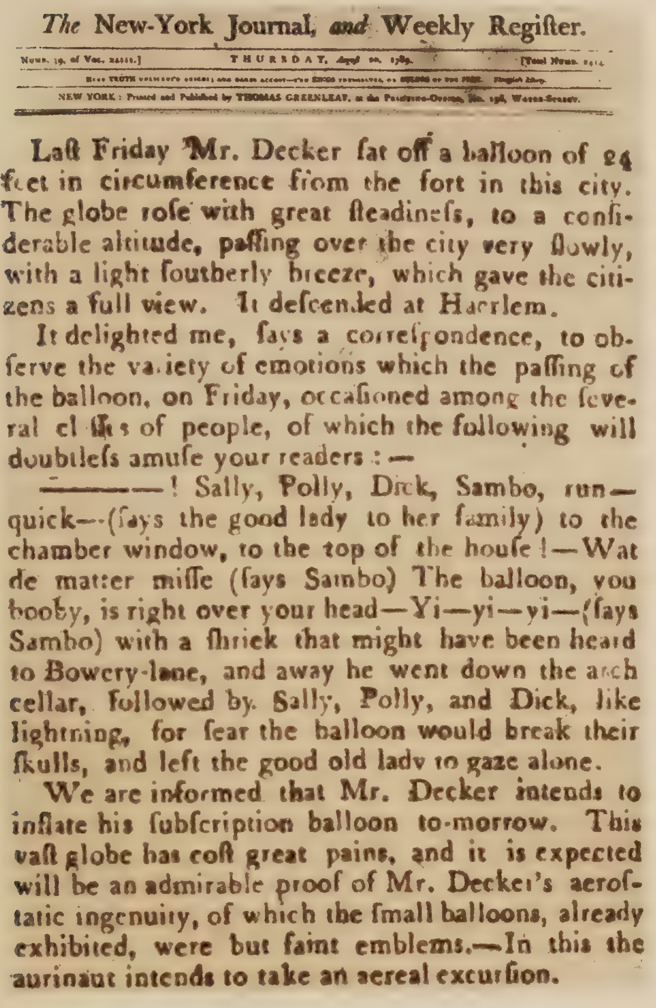
NATIONS *in Keen* RIVALRY *for* CONTROL *of* AIR—1789



INTERNATIONAL political cartoon (above) depicts Blanchard (in chariot) negotiating with the Nations—Spain, Germany, Denmark, Switzerland, Holland, England and the Pope of Rome. The English political cartoon (below) shows John Bull with aspirations after social freedom. Collection of Sir David Salomans.


JOHN BULL attempting to fly after the PHANTOM LIBERTY.

First ATTEMPTED ASCENSION *in* AMERICA *Fails*—1789



The New-York Journal, *and* Weekly Regiſter.

NEW YORK : Printed and Publiſhed by THOMAS GREENLEAF, at the Printing-Office, No. 198, Water-Street.

Laſt Friday Mr. Decker ſat off a balloon of 24 feet in circumference from the fort in this city. The globe roſe with great ſteadineſs, to a conſiderable altitude, paſſing over the city very ſlowly, with a light ſoutherly breeze, which gave the citizens a full view. It deſcended at Haerlem.

It delighted me, ſays a correſpondence, to obſerve the variety of emotions which the paſſing of the balloon, on Friday, occaſioned among the ſeveral claſſes of people, of which the following will doubtleſs amuſe your readers :—

————! Sally, Polly, Dick, Sambo, run—quick—(ſays the good lady to her family) to the chamber window, to the top of the houſe!—Wat de matter miſſe (ſays Sambo) The balloon, you booby, is right over your head—Yi—yi—yi—(ſays Sambo) with a ſhriek that might have been heard to Bowery-lane, and away he went down the arch cellar, followed by Sally, Polly, and Dick, like lightning, for fear the balloon would break their ſkulls, and left the good old lady to gaze alone.

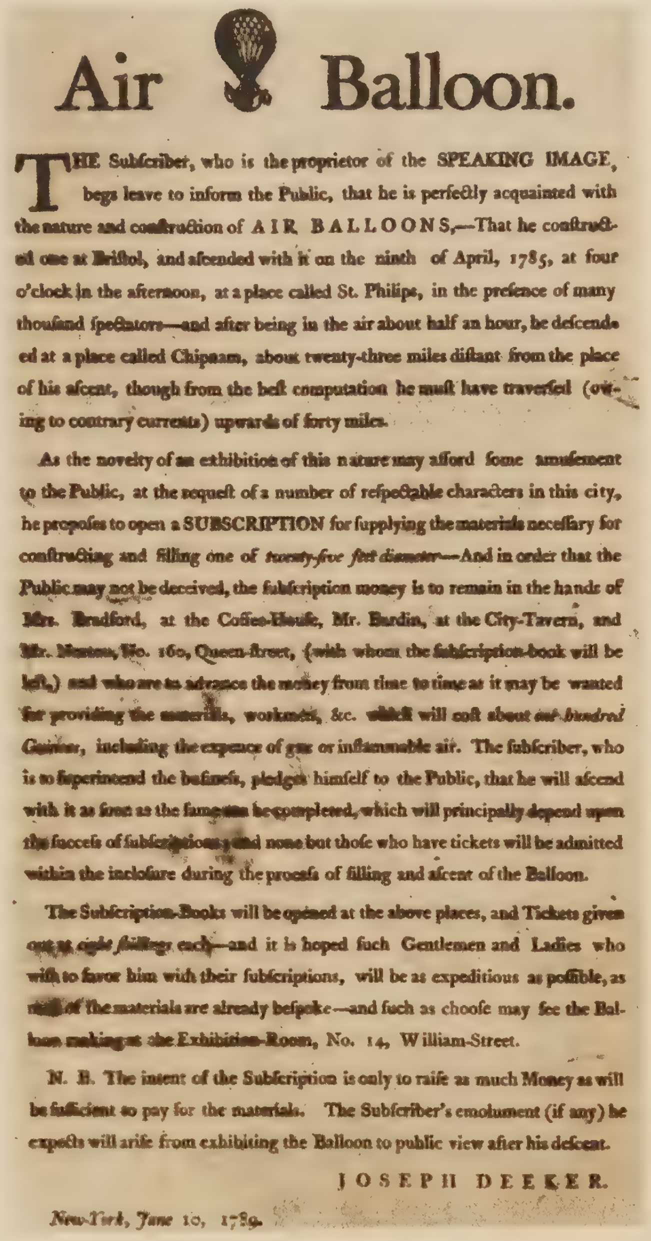
We are informed that Mr. Decker intends to inflate his ſubſcription balloon to-morrow. This vaſt globe has coſt great pains, and it is expected will be an admirable proof of Mr. Decker's aeroſtatic ingenuity, of which the ſmall balloons, already exhibited, were but faint emblems.—In this the aurinaut intends to take an aereal excurſion.

THE FIRST ATTEMPTED Ascension in America is that of Joseph Deeker, or Decker, in New York (September 23, 1789).

Deeker, an English showman, had come to New York exhibiting an attraction known as "The Speaking Image." He claimed some balloon experience in England—to have built a balloon at Bristol, as his broadside (above) states. He began circulating his broadside in (June 1785) and issued advertisements with the same text in the *New York Advertiser*.

Subscriptions came in slowly, but Deeker built a small balloon 6 feet in diameter and sent it up. The facsimile account of this (above) is from the *New York Journal and Weekly Register*. Shortly afterward, Deeker sent up a 10-foot balloon which landed in Flushing, according to the facsimile from the same newspaper (right).

His attempt (September 23, 1789) ended in failure and the loss of his balloon. In the words of the *New York Journal* the day after: "The day arrives—crowds of spectators fly to the theater of action—our hero partly inflates his aerial vehicle—the upper retainer is loosed—and, alas, the gas fails!—the balloon falls!—the fire communicates!—and the expectations of thousands ascend in fumo!"



Air Balloon.

THE Subſcriber, who is the proprietor of the SPEAKING IMAGE, begs leave to inform the Public, that he is perfectly acquainted with the nature and conſtruction of AIR BALLOONS,—That he conſtructed one at Briſtol, and aſcended with it on the ninth of April, 1785, at four o'clock in the afternoon, at a place called St. Philips, in the preſence of many thouſand ſpectators—and after being in the air about half an hour, he deſcended at a place called Chipnam, about twenty-three miles diſtant from the place of his aſcent, though from the beſt computation he muſt have traverſed (owing to contrary currents) upwards of forty miles.

As the novelty of an exhibition of this nature may afford ſome amuſement to the Public, at the requeſt of a number of reſpectable characters in this city, he propoſes to open a SUBSCRIPTION for ſupplying the materials neceſſary for conſtructing and filling one of *twenty-five feet diameter*—And in order that the Public may not be deceived, the ſubſcription money is to remain in the hands of Mrs. Bradford, at the Coffee-Houſe, Mr. Bardin, at the City-Tavern, and Mr. Newton, No. 160, Queen-ſtreet, (with whom the ſubſcription-book will be left,) and who are to advance the money from time to time as it may be wanted for providing the materials, workmen, &c. which will coſt about *one hundred Guineas*, including the expence of gas or inflammable air. The ſubſcriber, who is to ſuperintend the buſineſs, pledges himſelf to the Public, that he will aſcend with it as ſoon as the ſame can be completed, which will principally depend upon the ſucceſs of ſubſcriptions;—and none but thoſe who have tickets will be admitted within the incloſure during the proceſs of filling and aſcent of the Balloon.

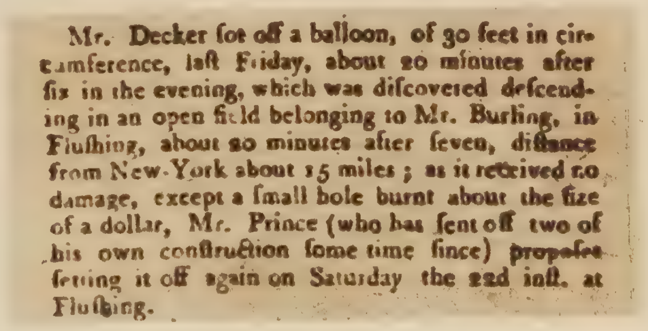
The Subſcription-Books will be opened at the above places, and Tickets given out at *eight ſhillings* each—and it is hoped ſuch Gentlemen and Ladies who wiſh to favor him with their ſubſcriptions, will be as expeditious as poſſible, as moſt of the materials are already beſpoke—and ſuch as chooſe may ſee the Balloon making at the Exhibition-Room, No. 14, William-Street.

N. B. The intent of the Subſcription is only to raiſe as much Money as will be ſufficient to pay for the materials. The Subſcriber's emolument (if any) he expects will ariſe from exhibiting the Balloon to public view after his deſcent.

JOSEPH DEEKER.

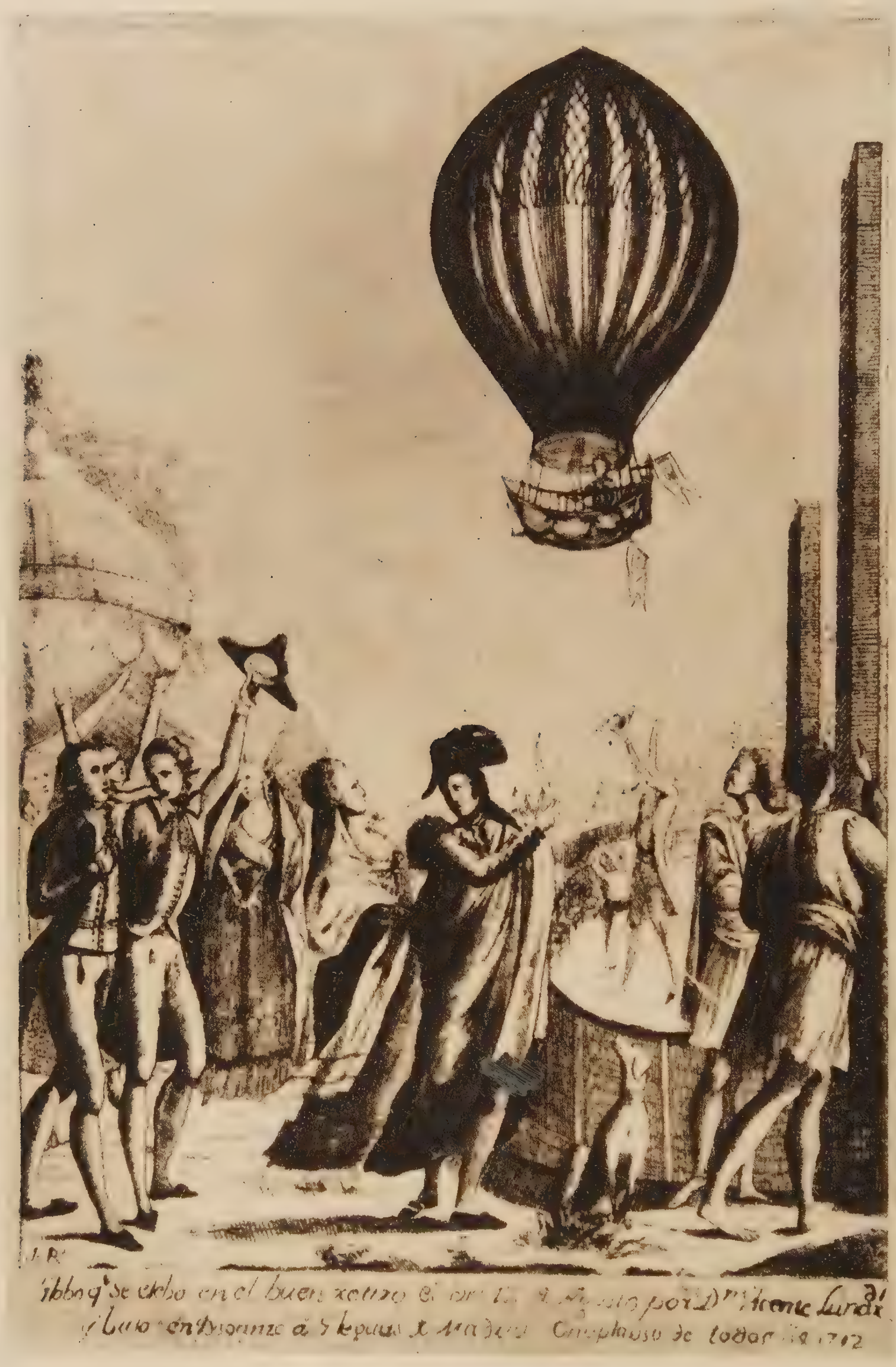
New-York, June 10, 1789.

DEEKER'S BROADSIDE ANNOUNCING FIRST ATTEMPTED ASCENT IN AMERICA



Mr. Decker ſet off a balloon, of 30 feet in circumference, laſt Friday, about 20 minutes after ſix in the evening, which was diſcovered deſcending in an open field belonging to Mr. Burling, in Fluſhing, about 20 minutes after ſeven, diſtance from New-York about 15 miles; as it received no damage, except a ſmall hole burnt about the ſize of a dollar, Mr. Prince (who has ſent off two of his own conſtruction ſome time ſince) propoſes ſetting it off again on Saturday the 22d inſt. at Fluſhing.

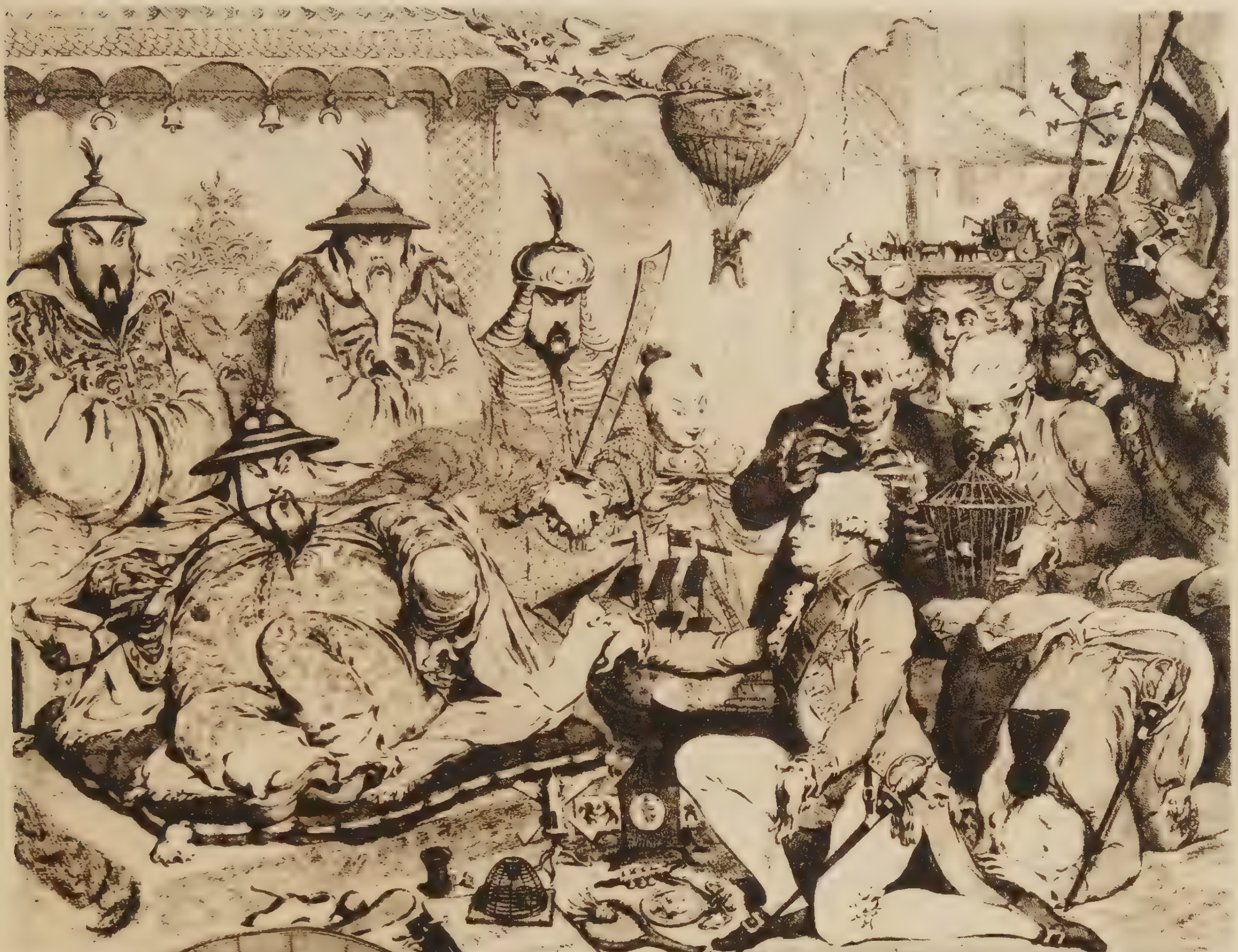
FIRST ASCENT *by* ROYAL COMMAND *in* MADRID—1792


J. R.
ibbo q.e se echo en el buen retiro [illegible] por D.n Vicente Lunardi
[illegible] Aplauso de todos [illegible]

SPAIN marches on to the Aerial Age. We find them acclaiming our friends, the gallant Vincent Lunardi as he makes his first ascent from Buen Retiro Park (August 12, 1792). We left him touring the English cities. He has since been experimenting in England and France with an invention for life-saving at sea.

Returning to his native Italy, he has been making balloon ascensions from Rome, Palermo, and Naples, twice falling into the sea but rescued unharmed. Charles IV, King of Spain, commands Lunardi to appear before him. The Aeronaut immediately becomes a Court favorite.

IMPERIAL COURT *at* PEKIN *Astonishes Diplomats*—1792



WE HAVE established the fact that the balloon was no novelty in China even before it came to Europe and the Western World (1783). The authority for this statement lies in official Chinese records.

When European diplomats arrived at the Court of Ch'ien Lung, Manchu Emperor of China (1792), bearing as gifts articles they believed would be new to him, they found the Chinese Court perfectly familiar with the balloon and making use of it in commerce and warfare.

The Manchu dynasty had come into power in China a century-and-a-half before (1644), when a Manchu prince was placed on the throne. Twenty years later, Manchu rule was supreme in all China. Ch'ien Lung reigned for sixty years (1736–1796) and great changes took place.

French, Dutch and British opened trade with China. The first ship from the United States, forerunner of a mighty fleet, came (1784) as the first balloons were going up in Great Britain.

Diplomatic representatives visited the Pekin Court and when they reached the presence of the mighty ruler, they found the balloon had *preceded them*, discovering themselves in the presence of a civilization centuries old when the Christian era began.

Heroic print (left) is symbolic of balloon ascensions in Italy by Giovanni Luder. Prints from Harry Guggenheim Collection.

First PRESIDENT *of* UNITED STATES *Issues* ORDERS—1793

"WASHINGTON AT HOME"—Painted by Alonzo Chappell, American portrait painter.

PART X

First FLIGHT *on the* WESTERN HEMISPHERE

Officially SPONSORED *by* WASHINGTON *in His* FIRST PRESIDENTIAL TERM

AMERICA enters into the arena of nations. The news of the "New Science" hitherto has come from the Old World by sailing vessels, storm-tossed at sea—and thence by pony express and stage coach from city to city. Now, it moves to the Western Hemisphere, eventually to be developed until (110 years later)America gives to the world the modern airplane on which inventors have worked through the centuries.

The First Recorded American to witness an "Air Voyage" is Benjamin Franklin, who was present at the First Human Ascension in the world's history (De Rozier—November 21, 1783), as fully established (see pages 138–140). The First American to take an Aerial Voyage is Dr. John Jeffries, of Boston, —from England to France—(January 7, 1785), as the First English Channel Passenger with Blanchard, the Frenchman (recorded on page 182).

Allow us again to upset historical statements: It is positively recorded by historians that the First Air Voyage in America took place in Philadelphia (December 28, 1783)—only thirty-eight days after Montgolfier in France. It is further recorded that "Messrs. Rittenhouse and Hopkinson, of the Philosophical Society of Philadelphia, are the unsung Americans"—and that one James Wilcox, a carpenter, was the First American Aeronaut. Investigations in the archives of the Historical Society of Pennsylvania officially discredit this alleged "event." They declare it to be without foundation.

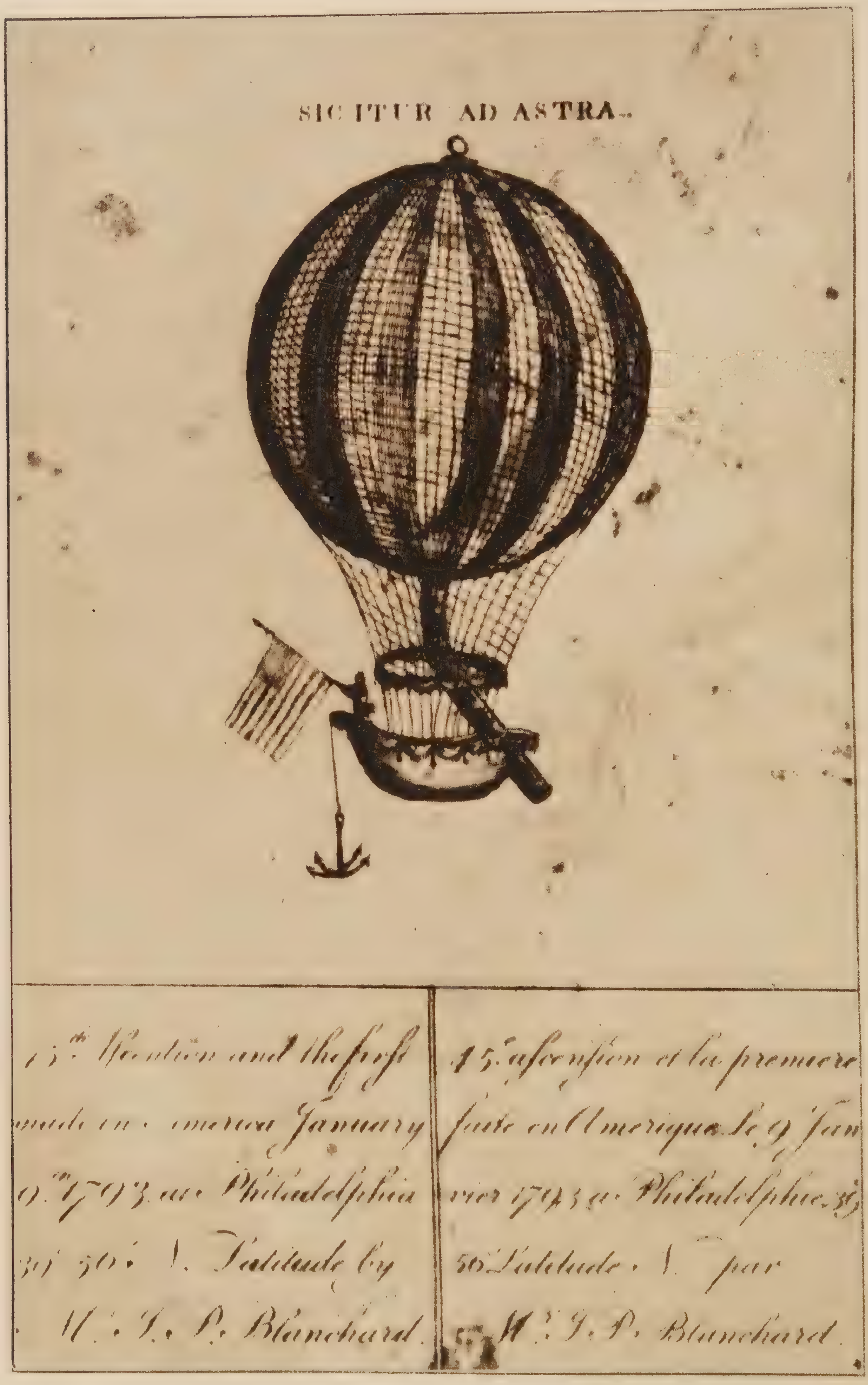
The First Balloon to be seen in America was exhibited by Dr. Foulke, who lectured on the subject at the University of Pennsylvania (May 17, 1784) when he invited George Washington to attend, as we have recorded (page 156). The First *Attempted* Ascent of an aeronaut is that of Joseph Deeker, from England, when his Balloon was burned during inflation in New York (August 14, 1789), as recorded with facsimile documents (see page 205).

The First Actual Ascent in America is that of Blanchard (January 9, 1793) at Philadelphia, as herein attested by documents bearing his signature, by warrants from President Washington in his own handwriting, and by documentary journals recording the event officially. Blanchard came to America after his celebrated Crossing of the English Channel, with Dr. Jeffries, the American.

Intense interest was shown in these events by Washington, Adams, Jefferson, Madison, Monroe. It created wide discussion among Alexander Hamilton, Aaron Burr, Patrick Henry, John Hancock, Henry Clay, John Randolph, John Marshall and Paul Revere—and men who were building the New Republic.

Eli Whitney, in this same year (1793), invented the cotton gin; Fitch, a few years before, had invented the steamboat; Samuel Morse, who was to invent the telegraph, was a two-year old boy; Daniel Webster was eleven years old; Davy Crockett was seven; and Daniel Boone was on the frontier. Franklin had died three years before in his 85th year. "Philadelphia gave him a magnificent funeral. The French Assembly went into mourning for three days. The whole civilized world was moved by the disappearance of the old sage who had done so much during his long life."

AMERICA *to Witness* FIRST FLIGHT—*Official Broadside*—1793



SIC ITUR AD ASTRA.

45th Aſcention and the first
made in America January
9th 1793 at Philadelphia
39 56 N. Latitude by
Mr. J. P. Blanchard.

45e aſcenſion et la premiere
faite en l'Amerique le 9 Jan
vier 1793 a Philadelphie 39
56 Latitude N. par
Mr. J. P. Blanchard.

Original Copy of Blanchard's Balloon Broadside in Archives of Pennsylvania Historical Society.

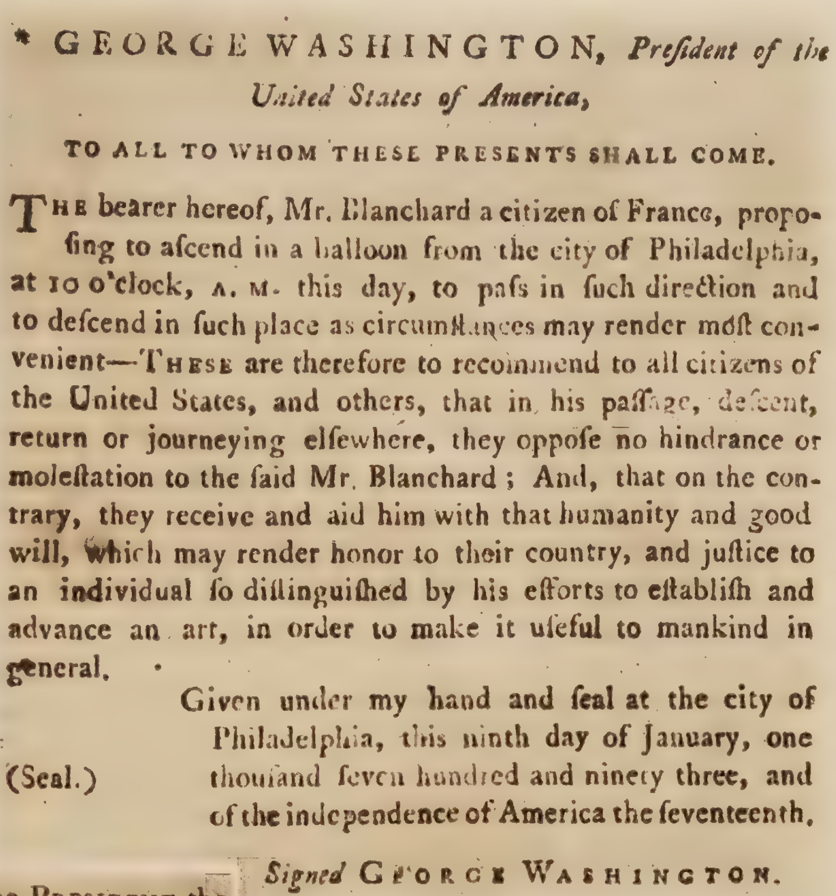
Official PROCLAMATION *Warning* NATION *of Import* — 1793

THE FIRST BALLOON ASCENSION in the United States took place at Philadelphia (January 9, 1793) when Jean-Pierre Blanchard, intrepid French aeronaut, made a successful ascent from the Prison Court in that city.

Blanchard arrived in America under auspices which resulted in his being presented to President Washington. On the morning of his ascension, Blanchard was presented by Washington with a "passport" recommending him to whomever he might meet during his ascent, descent or afterward.

The President, many of his Cabinet, a large number of both Houses of Congress and a vast assemblage witnessed this epochal event in Philadelphia (then the Nation's Capital). The whole town turned out—people came from miles around.

The squares and streets of Philadelphia and the nearby roads were packed with people; housetops, and even steeples, were black with humanity. Blanchard, rising in his balloon, looked down upon an immense sea of faces of men, women and children alight with intense and enthusiastic interest. A band of music played for hours and a heavy cannonading of artillery preceded his departure.



* GEORGE WASHINGTON, *Preſident of the United States of America,*

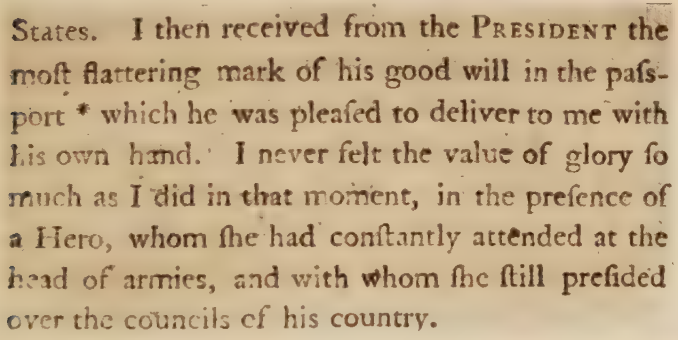
TO ALL TO WHOM THESE PRESENTS SHALL COME.

THE bearer hereof, Mr. Blanchard a citizen of France, propoſing to aſcend in a balloon from the city of Philadelphia, at 10 o'clock, A. M. this day, to paſs in ſuch direction and to deſcend in ſuch place as circumſtances may render moſt convenient—THESE are therefore to recommend to all citizens of the United States, and others, that in his paſſage, deſcent, return or journeying elſewhere, they oppoſe no hindrance or moleſtation to the ſaid Mr. Blanchard; And, that on the contrary, they receive and aid him with that humanity and good will, which may render honor to their country, and juſtice to an individual ſo diſtinguiſhed by his efforts to eſtabliſh and advance an art, in order to make it uſeful to mankind in general.

(Seal.)

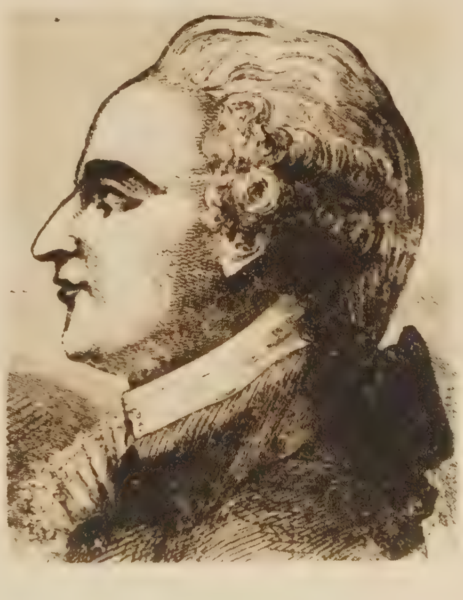
Given under my hand and ſeal at the city of Philadelphia, this ninth day of January, one thouſand ſeven hundred and ninety three, and of the independence of America the ſeventeenth.

Signed GEORGE WASHINGTON.

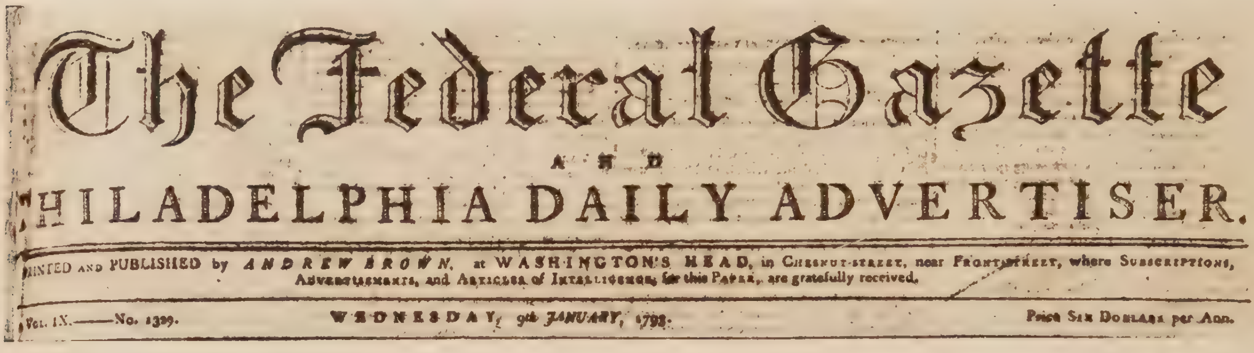


States. I then received from the PRESIDENT the moſt flattering mark of his good will in the paſſport * which he was pleaſed to deliver to me with his own hand. I never felt the value of glory ſo much as I did in that moment, in the preſence of a Hero, whom ſhe had conſtantly attended at the head of armies, and with whom ſhe ſtill preſided over the councils of his country.

THE "PASSPORT" (above) and the facsimile page (left) in which Blanchard tells of receiving it from George Washington, are from Blanchard's book giving his experiences in America. The portrait (below) shows the French aeronaut at the age of 40, when he made his ascension in Philadelphia.



FIRST FLIGHT *Recorded in* AMERICAN NEWSPAPERS—1793



The Federal Gazette

AND

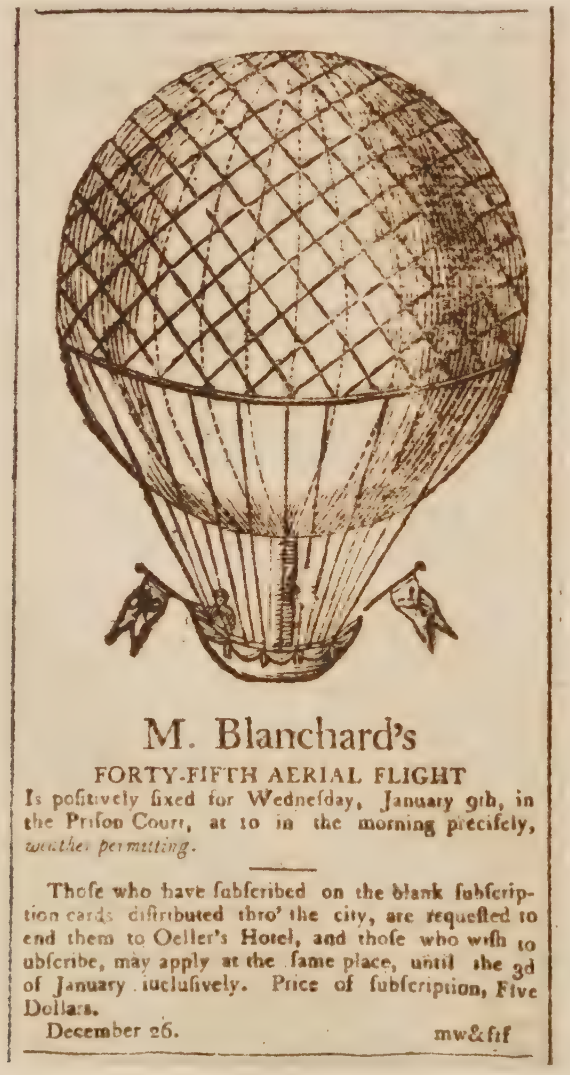
PHILADELPHIA DAILY ADVERTISER.

RINTED AND PUBLISHED by ANDREW BROWN, at WASHINGTON'S HEAD, in Chesnut-street, near Front-street, where Subscriptions, Advertisements, and Articles of Intelligence, for this Paper, are gratefully received.

Vol. IX.——No. 1309. WEDNESDAY, 9th JANUARY, 1793. Price Six Dollars per Ann.

THE FIRST ASCENT IN AMERICA took place at 10 o'clock in the morning (January 9, 1793). Blanchard's balloon was in process of inflation with hydrogen gas for an hour or more. Cannon fire had echoed at intervals from dawn of day—the final discharge coming just as the aeronaut left the earth. A band of music enlivened the occasion. At 10 o'clock all was in readiness. Blanchard bade Washington farewell.

Then "the Bold Adventurer" sprang into the boat-shaped balloon car, with its gilt spangles glistening in the sun against a brilliant blue. His balloon was of bright yellow varnished silk, and Blanchard wore a plain blue suit and a cocked hat with a white feather. The band played slow music. As the balloon began to ascend the crowd was absorbed and still. Then the throng burst into a great cheer. Blanchard doffed his hat and waved the Stars and Stripes and the colors of the French Republic.



M. Blanchard's

FORTY-FIFTH AERIAL FLIGHT

Is poſitively fixed for Wedneſday, January 9th, in the Priſon Court, at 10 in the morning preciſely, *weather permitting.*

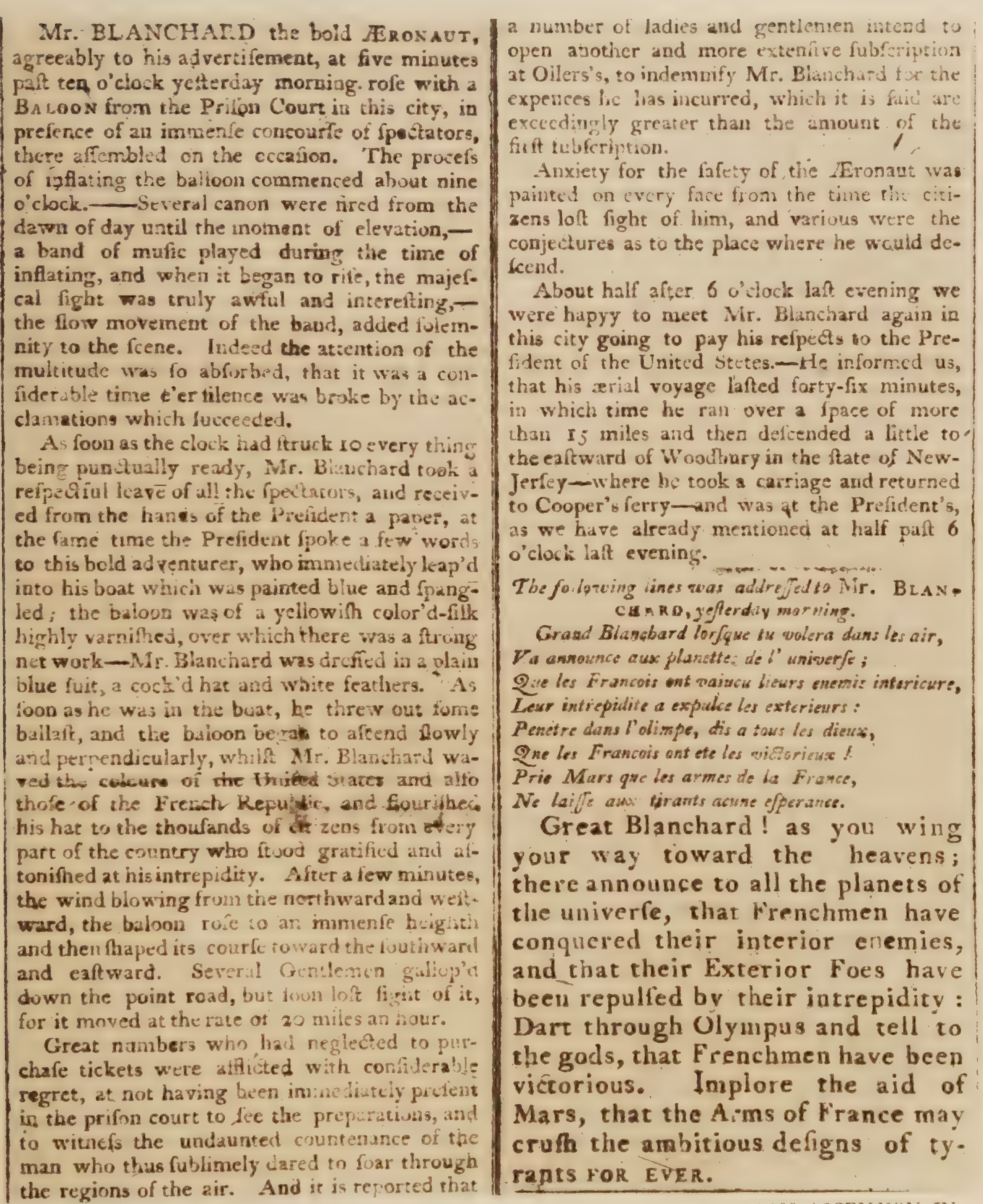
Thoſe who have ſubſcribed on the blank ſubſcription cards diſtributed thro' the city, are requeſted to end them to Oeller's Hotel, and thoſe who wiſh to ubſcribe, may apply at the ſame place, until the 3d of January iucluſively. Price of ſubſcription, Five Dollars.

December 26. mw&ftf

Blanchard's aerial voyage lasted about three-quarters of an hour. The balloon rose rapidly and immediately began drifting toward the southeast, soon crossing the river into New Jersey—at 20 miles an hour. He descended safely near Woodbury, New Jersey, about 15 miles from Philadelphia, where his "passport" proved invaluable.

"How dear is the name of Washington to these people!" he writes in his book. Escorted by Jonathan Penrose and his son Thomas, James Smith, Henry Moileure and Robert Wharton of Philadelphia, who had followed on horseback, Blanchard drove back to the city, arriving late that afternoon and again paid his respects to President Washington. The Advertisement of Blanchard's ascension (left) is a facsimile from *The Federal Gazette and Philadelphia Daily Advertiser.*

Facsimile "GREAT BLANCHARD'S" *Historic* VOYAGE—1793



Mr. BLANCHARD the bold ÆRONAUT, agreeably to his advertiſement, at five minutes paſt ten o'clock yeſterday morning. roſe with a BALOON from the Priſon Court in this city, in preſence of an immenſe concourſe of ſpectators, there aſſembled on the occaſion. The proceſs of inflating the balloon commenced about nine o'clock.——Several canon were fired from the dawn of day until the moment of elevation,—a band of muſic played during the time of inflating, and when it began to riſe, the majeſcal ſight was truly awful and intereſting,—the ſlow movement of the band, added ſolemnity to the ſcene. Indeed the attention of the multitude was ſo abſorbed, that it was a conſiderable time e'er ſilence was broke by the acclamations which ſucceeded.

As ſoon as the clock had ſtruck 10 every thing being punctually ready, Mr. Blanchard took a reſpectful leave of all the ſpectators, and received from the hands of the Preſident a paper, at the ſame time the Preſident ſpoke a few words to this bold adventurer, who immediately leap'd into his boat which was painted blue and ſpangled; the baloon was of a yellowiſh color'd-ſilk highly varniſhed, over which there was a ſtrong net work—Mr. Blanchard was dreſſed in a plain blue ſuit, a cock'd hat and white feathers. As ſoon as he was in the boat, he threw out ſome ballaſt, and the baloon began to aſcend ſlowly and perpendicularly, whilſt Mr. Blanchard waved the colours of the United States and alſo thoſe of the French Republic, and flouriſhed his hat to the thouſands of citizens from every part of the country who ſtood gratified and aſtoniſhed at his intrepidity. After a few minutes, the wind blowing from the northward and weſtward, the baloon roſe to an immenſe heighth and then ſhaped its courſe toward the ſouthward and eaſtward. Several Gentlemen gallop'd down the point road, but ſoon loſt ſight of it, for it moved at the rate of 20 miles an hour.

Great numbers who had neglected to purchaſe tickets were afflicted with conſiderable regret, at not having been immediately preſent in the priſon court to ſee the preparations, and to witneſs the undaunted countenance of the man who thus ſublimely dared to ſoar through the regions of the air. And it is reported that a number of ladies and gentlemen intend to open another and more extenſive ſubſcription at Oilers's, to indemnify Mr. Blanchard for the expences he has incurred, which it is ſaid are exceedingly greater than the amount of the firſt ſubſcription.

Anxiety for the ſafety of the Æronaut was painted on every face from the time the citizens loſt ſight of him, and various were the conjectures as to the place where he would deſcend.

About half after 6 o'clock laſt evening we were hapyy to meet Mr. Blanchard again in this city going to pay his reſpects to the Preſident of the United Stetes.—He informed us, that his ærial voyage laſted forty-ſix minutes, in which time he ran over a ſpace of more than 15 miles and then deſcended a little to the eaſtward of Woodbury in the ſtate of New-Jerſey—where he took a carriage and returned to Cooper's ferry—and was at the Preſident's, as we have already mentioned at half paſt 6 o'clock laſt evening.

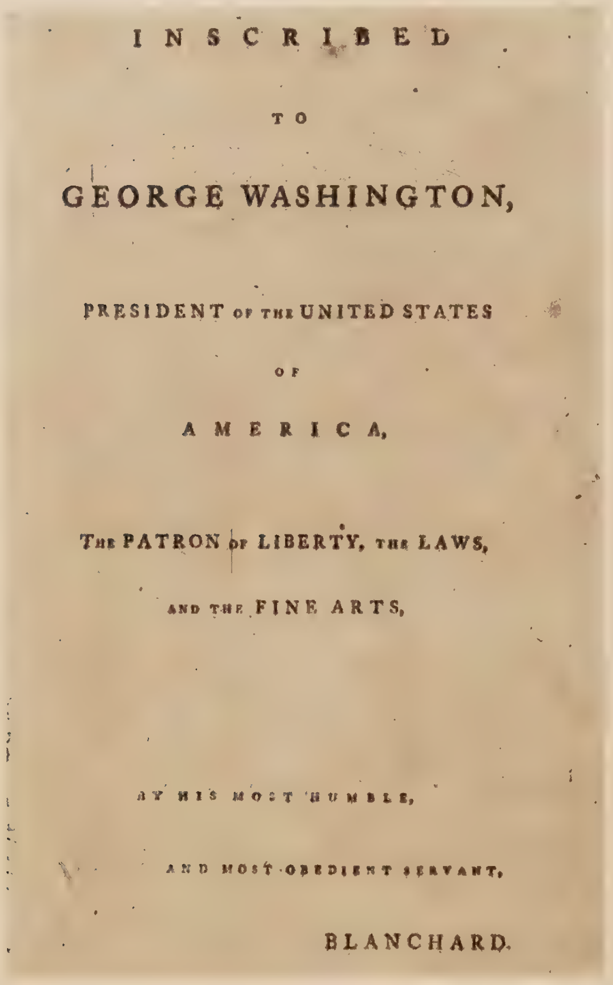
The following lines was addreſſed to Mr. BLANCHARD, *yeſterday morning.*

Grand Blanchard lorſque tu volera dans les air,
Va announce aux planettes de l' univerſe ;
Que les Francois ont vaincu lieurs enemis intericure,
Leur intrepidite a expulce les exterieurs :
Penetre dans l'olimpe, dis a tous les dieux,
Que les Francois ont ete les victorieux !
Prie Mars que les armes de la France,
Ne laiſſe aux tirants acune eſperance.

Great Blanchard! as you wing your way toward the heavens; there announce to all the planets of the univerſe, that Frenchmen have conquered their interior enemies, and that their Exterior Foes have been repulſed by their intrepidity: Dart through Olympus and tell to the gods, that Frenchmen have been victorious. Implore the aid of Mars, that the Arms of France may cruſh the ambitious deſigns of tyrants FOR EVER.

FACSIMILE NEWSPAPER ACCOUNT OF BLANCHARD'S FIRST BALLOON ASCENSION IN AMERICA — This picturesque narrative of the thrilling spectacle is reproduced in facsimile from *The Federal Gazette and Philadelphia Daily Advertiser* (Thursday, January 10, 1793) the day after the great event took place. At the end are appended lines in French with their English translation, addressed to Blanchard by a committee of French patriots in Philadelphia, who presented it on the morning of his ascension.

Official Report Issued by BLANCHARD *to* WASHINGTON—1793



INSCRIBED

TO

GEORGE WASHINGTON,

PRESIDENT OF THE UNITED STATES

OF

AMERICA,

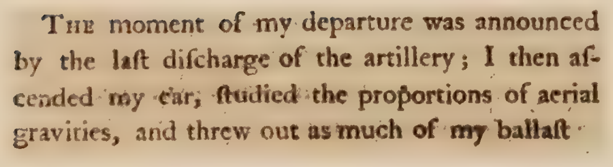
THE PATRON OF LIBERTY, THE LAWS,

AND THE FINE ARTS,

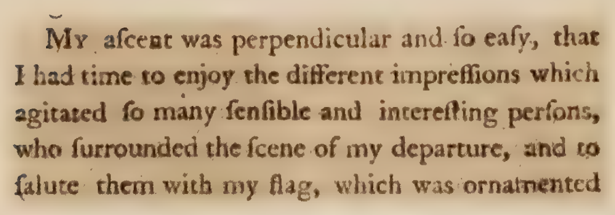
BY HIS MOST HUMBLE,

AND MOST OBEDIENT SERVANT,

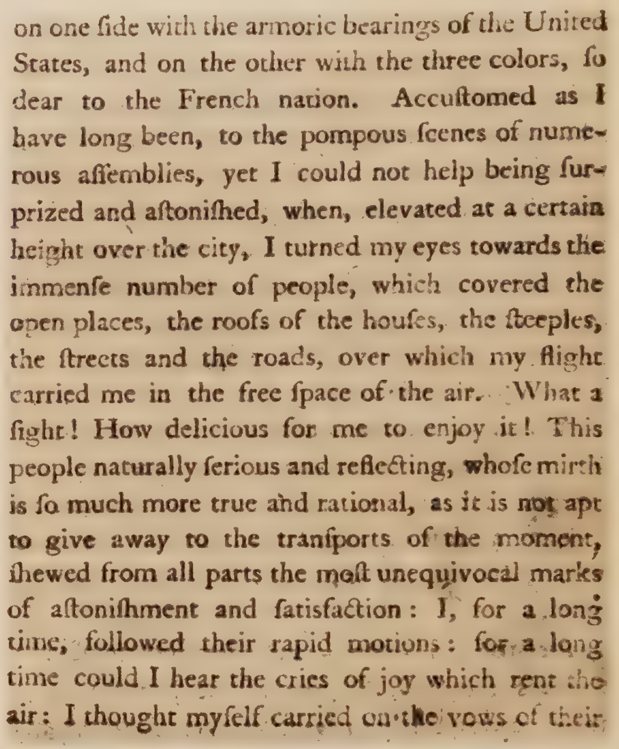
BLANCHARD.



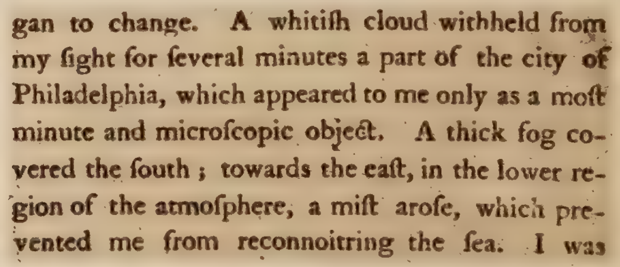
THE moment of my departure was announced by the laſt diſcharge of the artillery; I then aſcended my car, ſtudied the proportions of aerial gravities, and threw out as much of my ballaſt



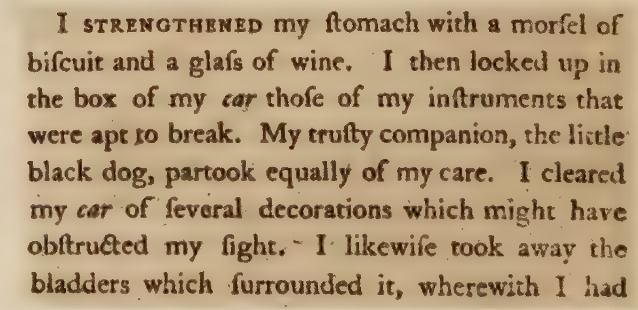
MY aſcent was perpendicular and ſo eaſy, that I had time to enjoy the different impreſſions which agitated ſo many ſenſible and intereſting perſons, who ſurrounded the ſcene of my departure, and to ſalute them with my flag, which was ornamented



on one ſide with the armoric bearings of the United States, and on the other with the three colors, ſo dear to the French nation. Accuſtomed as I have long been, to the pompous ſcenes of numerous aſſemblies, yet I could not help being ſurprized and aſtoniſhed, when, elevated at a certain height over the city, I turned my eyes towards the immenſe number of people, which covered the open places, the roofs of the houſes, the ſteeples, the ſtreets and the roads, over which my flight carried me in the free ſpace of the air. What a ſight! How delicious for me to enjoy it! This people naturally ſerious and reflecting, whoſe mirth is ſo much more true and rational, as it is not apt to give away to the tranſports of the moment, ſhewed from all parts the moſt unequivocal marks of aſtoniſhment and ſatisfaction: I, for a long time, followed their rapid motions: for a long time could I hear the cries of joy which rent the air: I thought myſelf carried on the vows of their



gan to change. A whitiſh cloud withheld from my ſight for ſeveral minutes a part of the city of Philadelphia, which appeared to me only as a moſt minute and microſcopic object. A thick fog covered the ſouth; towards the eaſt, in the lower region of the atmoſphere, a miſt aroſe, which prevented me from reconnoitring the ſea. I was

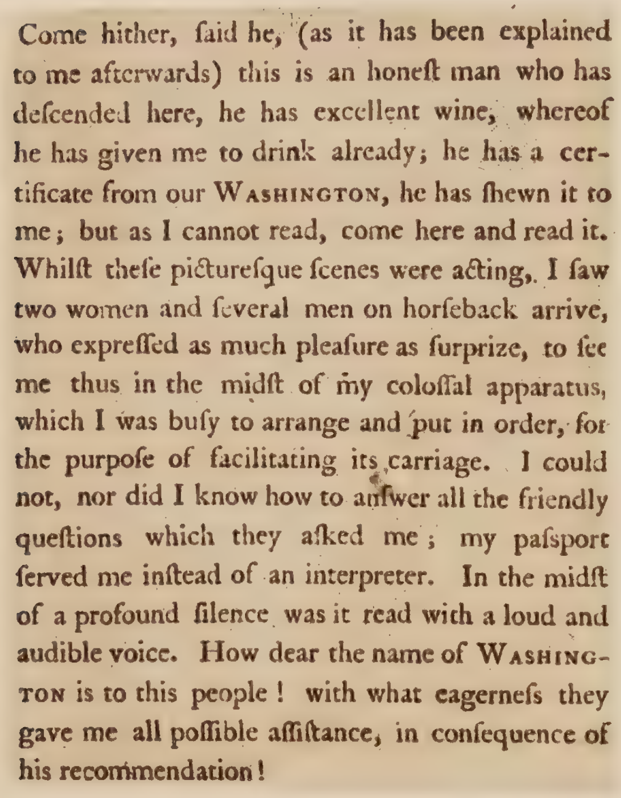


I STRENGTHENED my ſtomach with a morſel of biſcuit and a glaſs of wine. I then locked up in the box of my *car* thoſe of my inſtruments that were apt to break. My truſty companion, the little black dog, partook equally of my care. I cleared my *car* of ſeveral decorations which might have obſtructed my ſight. I likewiſe took away the bladders which ſurrounded it, wherewith I had

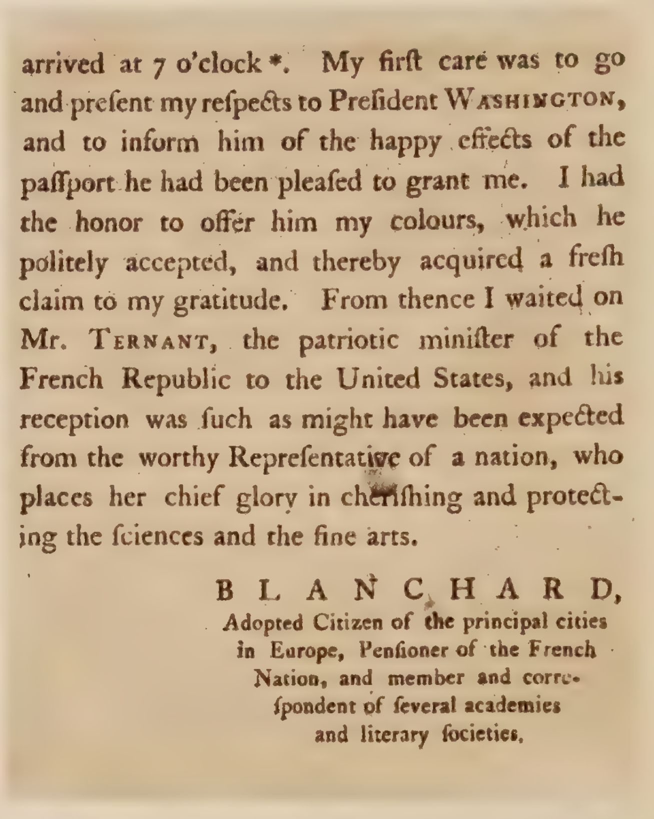
TITLE PAGE OF BLANCHARD'S BOOK INSCRIBED TO GEORGE WASHINGTON—These excerpts in facsimile are from a rare copy of the record written by Jean-Pierre Blanchard, great French Aeronaut, telling the story of the First Balloon Ascension in America in Philadelphia (January 9, 1793). Original in Collection of New York Public Library.

GEORGE WASHINGTON—FIRST PRESIDENT OF THE UNITED STATES (1789–1797)
Full length portrait from the talented brush of Gilbert Stuart, famous American portrait painter.
In the Lenox Collection now in the New York Public Library.

FRENCH AERONAUT *Records* EXPERIENCES *in* AMERICA



Come hither, ſaid he, (as it has been explained to me afterwards) this is an honeſt man who has deſcended here, he has excellent wine, whereof he has given me to drink already; he has a certificate from our WASHINGTON, he has ſhewn it to me; but as I cannot read, come here and read it. Whilſt theſe pictureſque ſcenes were acting, I ſaw two women and ſeveral men on horſeback arrive, who expreſſed as much pleaſure as ſurprize, to ſee me thus in the midſt of my coloſſal apparatus, which I was buſy to arrange and put in order, for the purpoſe of facilitating its carriage. I could not, nor did I know how to anſwer all the friendly queſtions which they aſked me; my paſsport ſerved me inſtead of an interpreter. In the midſt of a profound ſilence was it read with a loud and audible voice. How dear the name of WASHINGTON is to this people! with what eagerneſs they gave me all poſſible aſſiſtance, in conſequence of his recommendation!

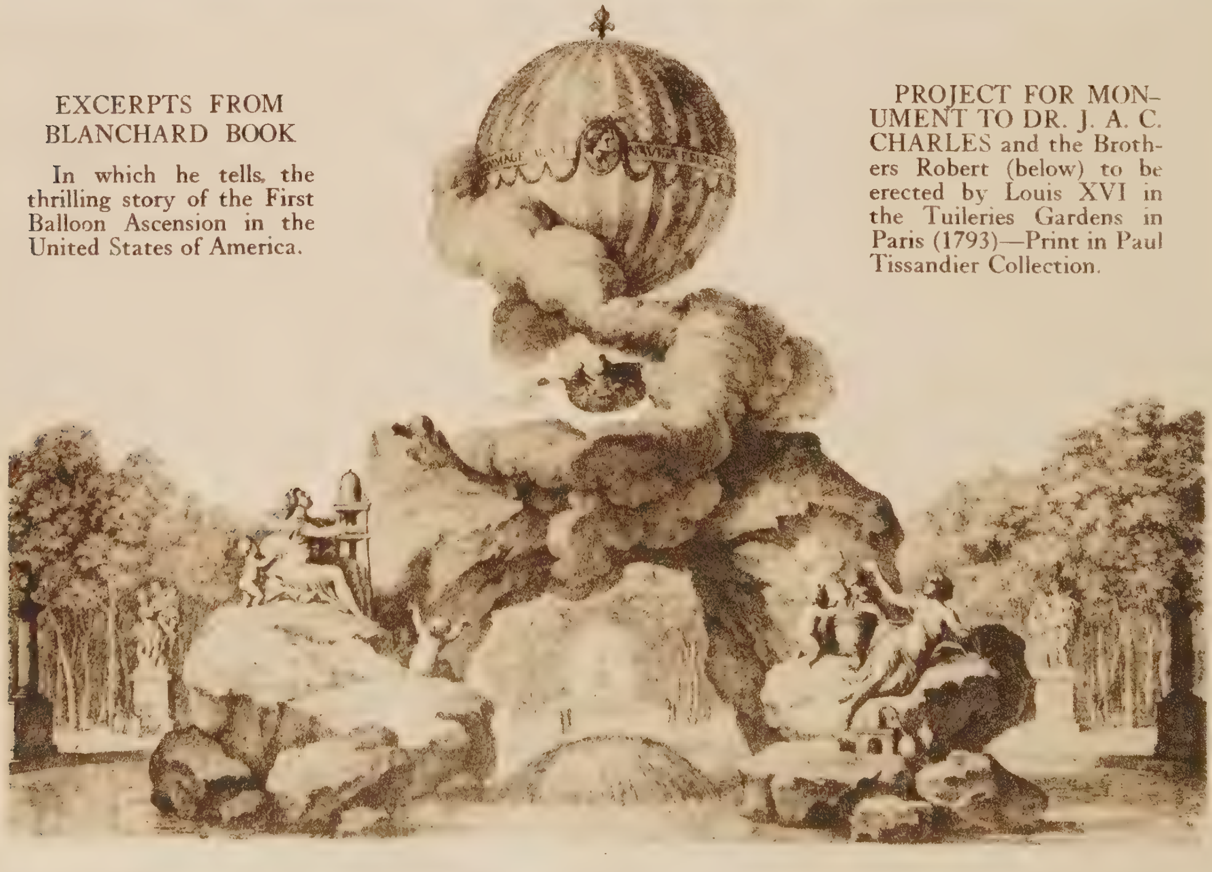


arrived at 7 o'clock *. My firſt care was to go and preſent my reſpects to Preſident WASHINGTON, and to inform him of the happy effects of the paſſport he had been pleaſed to grant me. I had the honor to offer him my colours, which he politely accepted, and thereby acquired a freſh claim to my gratitude. From thence I waited on Mr. TERNANT, the patriotic miniſter of the French Republic to the United States, and his reception was ſuch as might have been expected from the worthy Repreſentative of a nation, who places her chief glory in cheriſhing and protecting the ſciences and the fine arts.

BLANCHARD,
Adopted Citizen of the principal cities
in Europe, Penſioner of the French
Nation, and member and correſpondent of ſeveral academies
and literary ſocieties.

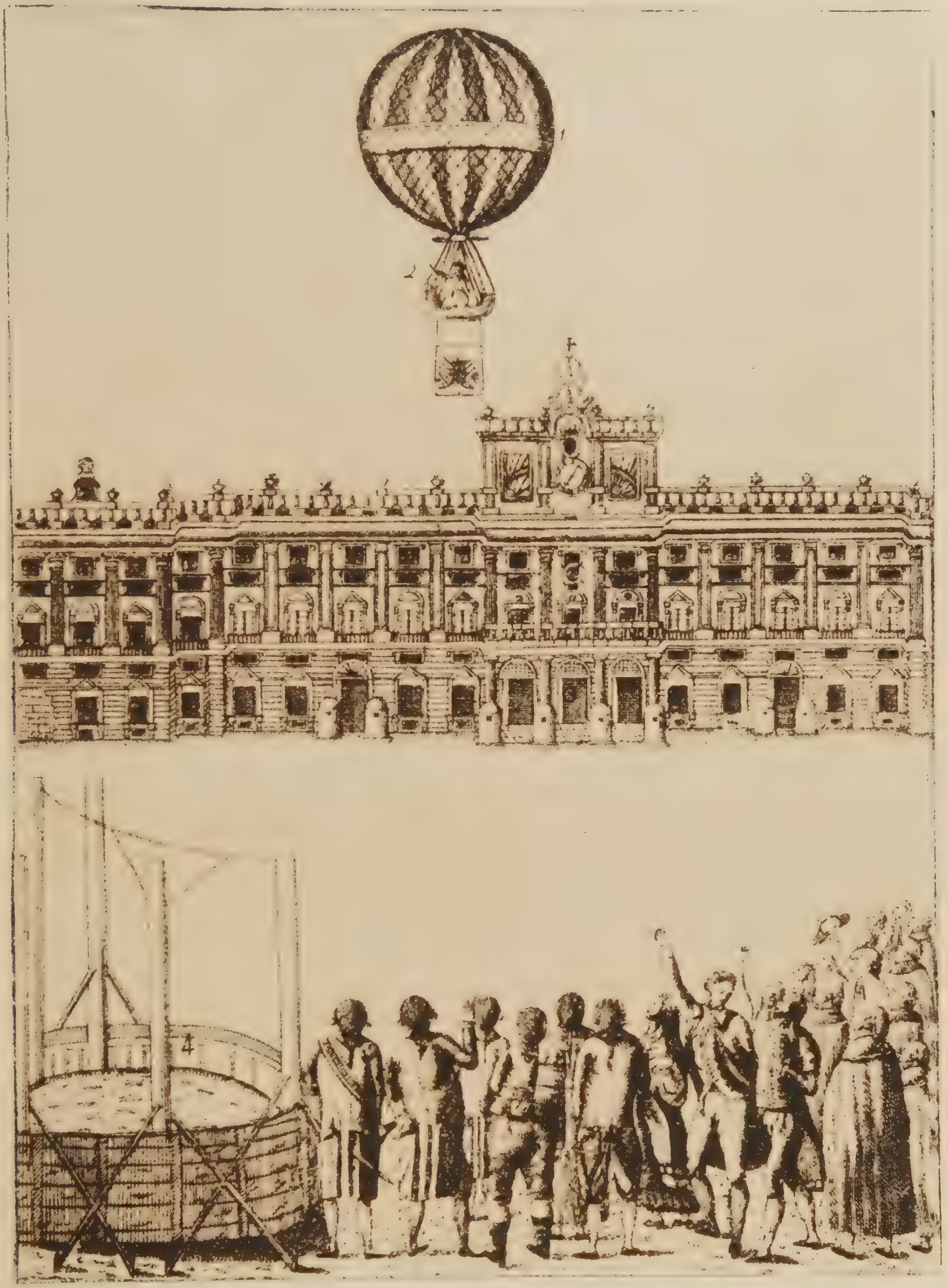
EXCERPTS FROM BLANCHARD BOOK

In which he tells the thrilling story of the First Balloon Ascension in the United States of America.



PROJECT FOR MONUMENT TO DR. J. A. C. CHARLES and the Brothers Robert (below) to be erected by Louis XVI in the Tuileries Gardens in Paris (1793)—Print in Paul Tissandier Collection.

LUNARDI *at Palace of* BOURBON DYNASTY *in* SPAIN—1793



LUNARDI'S FINAL BALLOON ASCENSIONS were made in Spain and Portugal. At the Royal Command of King Charles IV, Lunardi made three ascents before the Palace in Madrid (January 8, 1793). He also ascended at Canada Larga and Horcajo. The peasantry mistook him for a saint fallen from heaven and escorted him to the local church. Lunardi made his first ascent in Portugal (August 24, 1794). He never returned to Italy and died of a decline in a convent at Barbadinas, near Lisbon (July 31, 1806).

PORTRAIT STUDY OF NAPOLEON BONAPARTE by Paul Delaroche, noted French painter. Original painted for the Private Collection of Lady Sandwich of England.

PART XI

HISTORIC FLIGHTS *Through* REIGN *of* NAPOLEON

FRENCH REVOLUTION *and* FIRST DECADES *of the* NINETEENTH CENTURY

NAPOLEON comes on the scene of action. The Bastille has fallen; the French Revolution is raging; Louis XVI has gone to his execution. The Directory is forming and the young Corsican is soon to become First Consul—then to be crowned as Emperor and start on his mighty campaigns to win the Conquest of Europe.

We find France at the forefront again—first to utilize the air in warfare (1794) with the appointment of the "First Brigade Commander in Charge of Aeronautics." We see Coutelle at his observation post in the Battle of Fleurus. France gives to the world the First Parachute Descent from a Balloon—Garnerin in Paris (October 22, 1797).

Lord Nelson defeats the French fleet in the Battle of the Nile (1798). Napoleon rises to power—as George Washington, "Father of His Country," dies in America (1799).

The new century opens with Europe "a field of carnage". The Battle of Marengo is fought—and the Battle of Hohenlinden (1800). The Union of Great Britain and Ireland is consummated (1801). The First Parachute Descent in England takes place (Garnerin—September 21, 1802).

England and France renew war (1803). Napoleon is proclaimed Emperor with a huge Coronation Balloon over his head (May 18, 1804). Projects for the invasion of England by air are proposed to Napoleon. The Battle of Trafalgar (with the death of Lord Nelson) is fought—and the Battle of Austerlitz (1805). The end of the Holy Roman Empire stirs the world (1806).

Lunardi, the Italian who made the First Ascent in England, dies after suffering reverses and poverty, in a convent in Lisbon (July 31, 1806). Fulton makes the First Steamboat Voyage in America (1807), while Germany is working on a "Flugmaschine in which everybody can fly." Cayley is making his first experiments in England (1808). Blanchard, the famous aeronaut who was First to Cross the English Channel—and First to Ascend in America—dies in Paris (1809).

The first decade of the Nineteenth Century is a seething age. Civilization is in the cauldron—burning and flaming. The Old World is in conflagration. The New World is laying its foundations for the building of a powerful nation.

Napoleon, bankrupt through his conquests, has sold to the United States the vast Empire of the West (the rich French possessions west of the Mississippi River) nearly four times the area of all France. The natural resources of this grand domain (the Louisiana Purchase) are to develop fabulous wealth which eventually is to become an important factor in making America the richest country in the world.

Canada, a mighty dominion with an area about equal to all Europe, a giant son which could hold in its outstretched arms seventy-two Mother Englands, is surveying its enormous resources.

This is the status of the world at this time (1810) when the new Science of Aeronautics is exploring adventurous sky-paths. At the close of the century it is to create a "Scientific Revolution" of far greater consequence than the destructive wars of Napoleon.

First BRIGADE COMMANDER *in Charge of Aeronautics*—1794

CAPTAIN J. M. J. COUTELLE (1748–1835), was Napoleon's "Captain of Aerostiers," the World's First Military Balloon Observer. He "spotted" for the French artillery at the Battle of Fleurus in Belgium (June 26, 1794) and was a big factor in the French victory through information signalled with flags to General Jourdan, Commander-in-Chief of the French forces.

Coutelle made the first military balloon ascent in warfare. He was in the air for several hours, always well out over "No Man's Land" and often, in fact, actually over the enemy's lines.

Captain Coutelle was from the first associated with Conte as the first military balloonist. By Napoleon's command, he conducted hydrogen gas experiments in balloon inflation at Meudon (April 2, 1794). He was materially aided by A. L. Lavoisier, distinguished French chemist who originated the term "hydrogen" used to replace the earlier "inflammable air," and also by Dr. J. A. C. Charles.

Out of these experiments came the First Balloon Corps in the World—in Napoleon's army, with Coutelle in command. He joined Jourdan at Fleurus (June, 1794). He did balloon reconnaissance at the siege of Mayence (1796) and elsewhere.

He was ordered to Egypt by Napoleon (1798), when the balloon equipment was destroyed in the naval Battle of Aboukir Bay. His "aerostiers" were disbanded (1799) and, though Louis Napoleon used the balloon in Italy, military ballooning in France languished for half a century.

PORTRAIT OF COUTELLE (above) AND OF CONTE (right)

THE FIRST use of balloons as a military arm came with the French Revolution. Napoleon Bonaparte had been quick to see the possibilities of aerostation and adopted it about as soon as it was possible for him to get dependable balloons.

The two men whose portraits appear here are—Captain J. M. J. Coutelle (above), "Captain of Aerostiers," and Captain N. J. Conte (right), Chief of Napoleon's infantry brigade which included the aerostatic establishment.

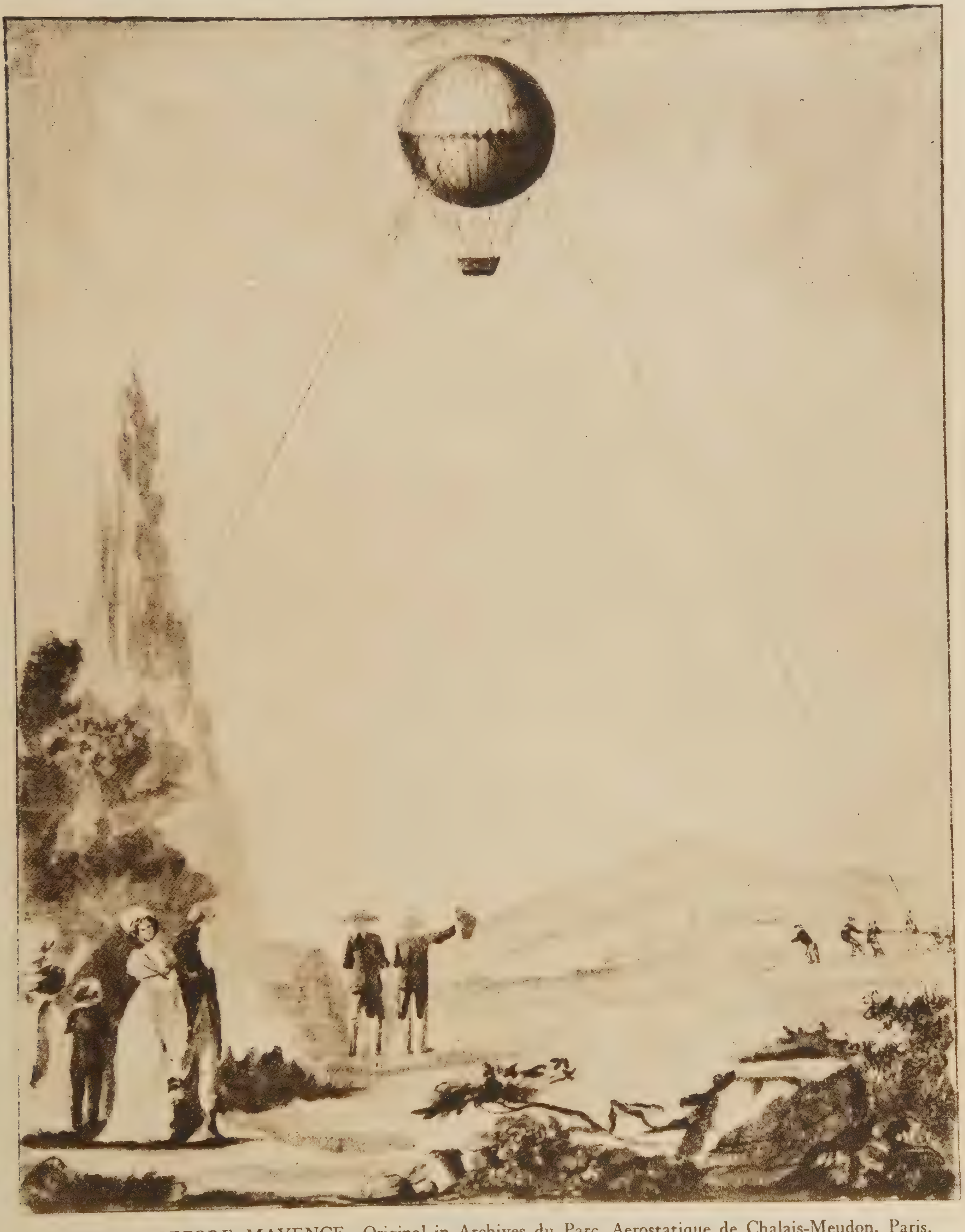
L. B. Guyton de Morveau (1737–1816), distinguished chemist whom we have seen experimenting with the First Navigable Balloon at Dijon, was first to propose to the Convention the use of captive balloons in military operations (1792). Two years later, Coutelle and Conte put these ideas, of whose practicability and usefulness Napoleon had become convinced, into practice.

Nicolas Jacques Conte (right) was a French mechanical genius, chemist and painter, (1755–1805).

He was associated with Monge and Berthollet in experiments in the inflation of military balloons. He later conducted the School of Military Ballooning at Meudon and perfected methods of producing hydrogen gas in quantity, losing an eye for the cause.

He then was appointed by the Directory as head of all French aerostatic establishments (1796). He was chief of the air corps in the Expedition to Egypt, for three years and a half, introducing North Africa to French civilization.

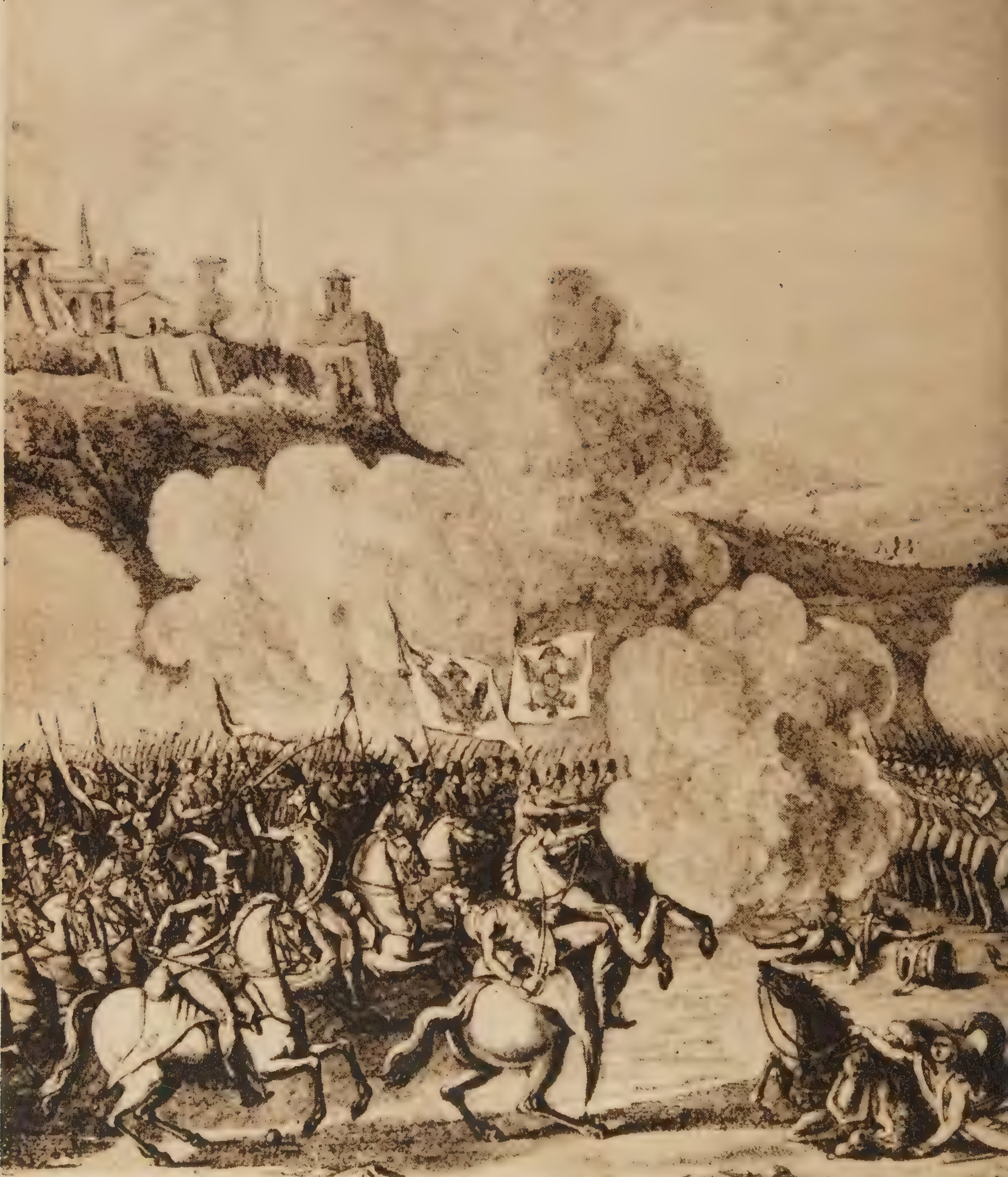
FRENCH REVOLUTION *First to Utilize* AIR *in* WAR—1794



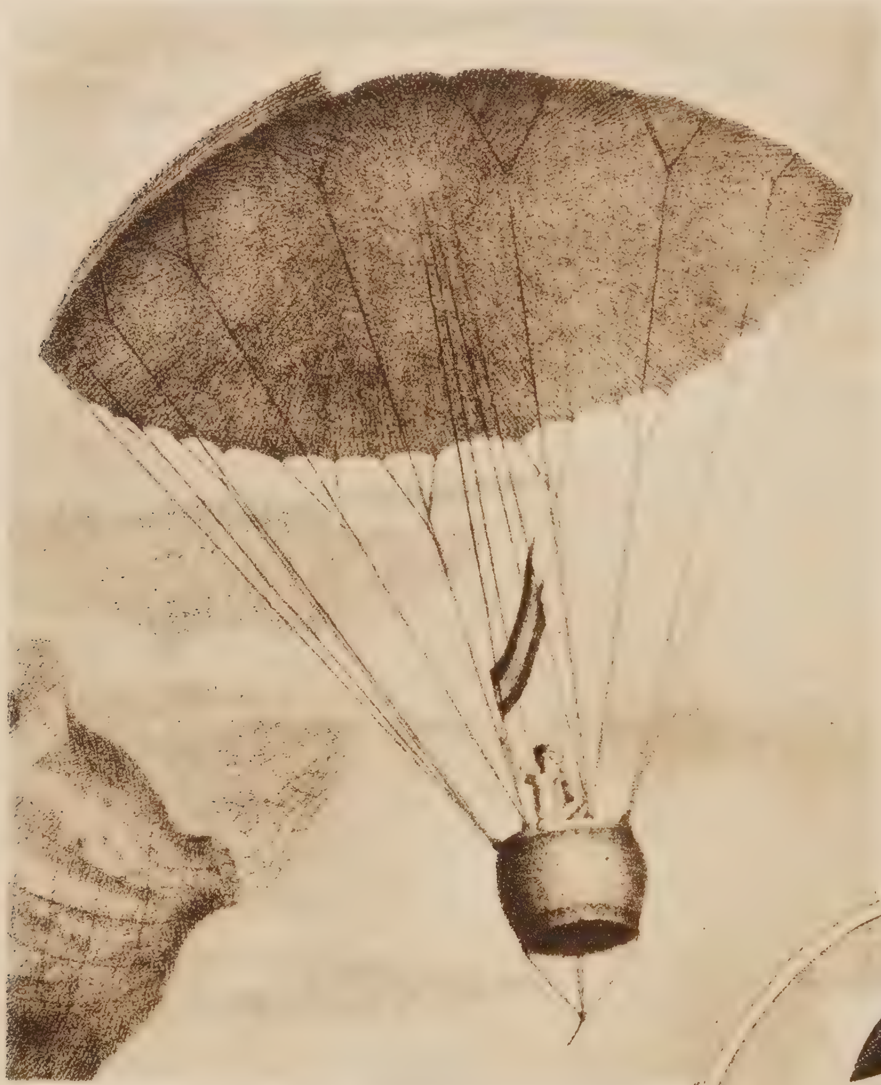
COUTELLE BEFORE MAYENCE—Original in Archives du Parc Aerostatique de Chalais-Meudon, Paris.

COUTELLE *at Observation Post* BATTLE *of* FLEURUS—1794

Historic Print showing First Use of Balloon in Warfare (June 26, 1794)—First Military Balloon "L'Entreprenant" over the French Lines—Line engraving by Le Beau after Naudet—Impression in Chalet Meudon in Paris.



FIRST MAN *to* DROP *from* CLOUDS *in a* PARACHUTE—1797



ANDRE JACQUES GARNERIN (1769–1825) was the first man in the world to drop from a balloon in a parachute. He ascended in the car of a closed parachute from the Parc Monceau, Paris, before another vast assemblage (October 22, 1797). At a height of 3,000 feet he cut himself loose from the balloon and came safely to earth.

Garnerin's parachute was but 8 yards in diameter and descended rapidly enough to strike the ground with such violence as to throw him from his seat. He was injured only to the extent of a bruised foot. Mounting a horse he returned to the still gasping multitude at the Parc Monceau. The balloon rose rapidly after Garnerin left it in mid-air and soon burst. Portrait of Garnerin, with his signature, and stipple engraving of parachute descent in Bibliotheque Nationale, Paris.

André Jacques Garnerin né à Paris le
31. Janvier 1769.

GARNERIN, first to dare a parachute descent, was Official Aeronaut of the French Government under the Directory and in the first days of the Empire. He was a native of Paris, son of a pewterer, and was in college when the Montgolfier brothers invented the balloon.

He neglected his studies to make many small balloons, which so incensed the head of the institution where he was studying that he threatened to expel Garnerin if he did not abstain from wasting time on "such baubles."

A young man of 25 years (1795), Garnerin embraced the French Revolution and soon was sent by the Committee of Public Safety on a secret mission to Napoleon's Army of the North. He was taken prisoner by the Austrian division under the Duke of York at the retaking of Marchiennes, and for more than two years was a prisoner of war in Hungary.

He was finally exchanged and returned to Paris, where he soon found his services were forgotten and again gave his attention to ballooning. As official Aeronaut of France, he visited England, Prussia and Russia.

GARNERIN *Makes First Parachute Descent in* ENGLAND, 1800

ENGLAND first saw the parachute in use when Andre-Jacques Garnerin made his first drop in London (September 21, 1802)—following his famous descents in France.

His balloon ascended from the Volunteer Ground, Grosvenor Square, before a great gathering of spectators. Several hundred thousand people saw the huge aerostat rise with Garnerin's parachute attached beneath by a long cord. He was calmly seated in the basket of the parachute.

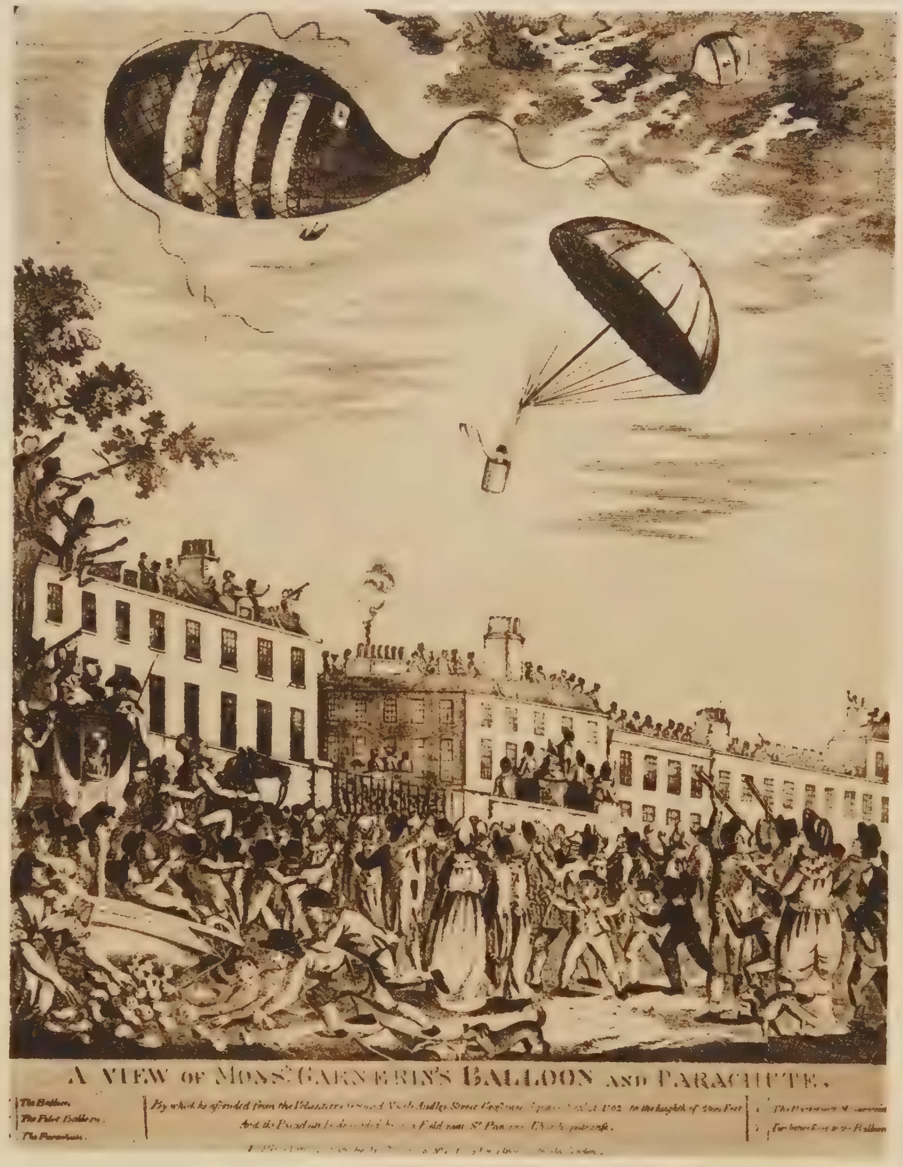
The balloon reached a height of around 8,000 feet. The multitude, craning necks below, held its breath. Garnerin cut the rope which fastened the parachute—and was dropping away from it.

A long, drawn-out moment—a mighty sigh—the big parasol slowly opened, checking the aeronaut's descent.

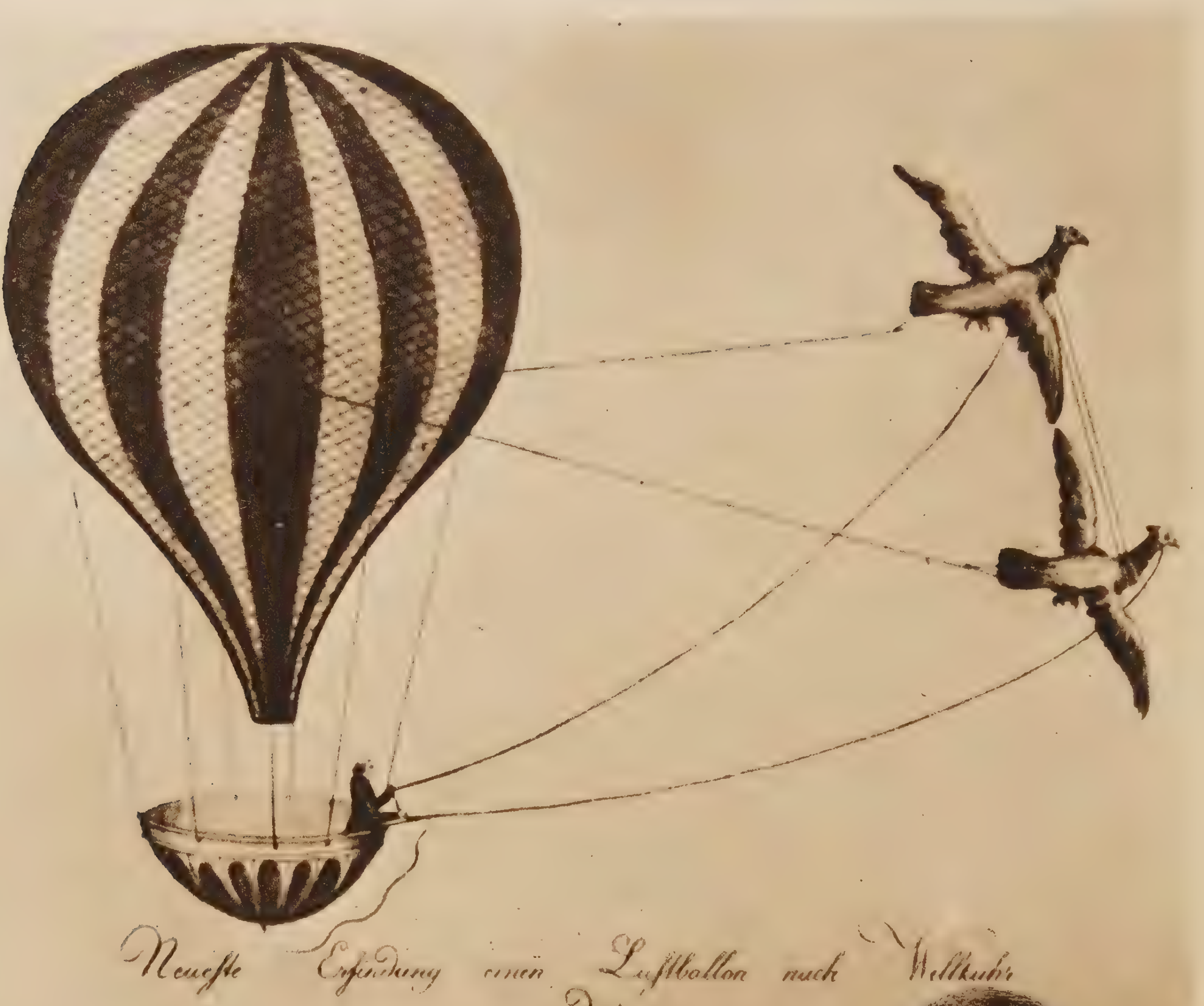
Garnerin gradually drew back to earth, swaying in the autumn breeze. It took him ten minutes or more to reach terra firma. He landed easily near St. Pancras' Church and fell into the excited embrace of the first man to reach him, who had raced on horseback.

Garnerin made other balloon ascents on this English visit, and was accompanied by his wife and Duncan Glassfurd. On August 3, 1802 a small parachute was released with a kitten suspended beneath.

Contemporary print (right) in Collection of British Museum. Engraving (below) from souvenir writing sheet of Garnerin's English ascents (London, 1802).


A VIEW OF MONS.R GARNERIN'S BALLOON AND PARACHUTE.
The Balloon.
The Pilot Balloon.
The Parachute.

AUSTRIA *Proposes* BALLOON *Drawn by* EAGLES—1801


Neueſte Erfindung einen Luftballon nach Willkühr
zu dirigiren
ſamt einer gedruckten Erklärung

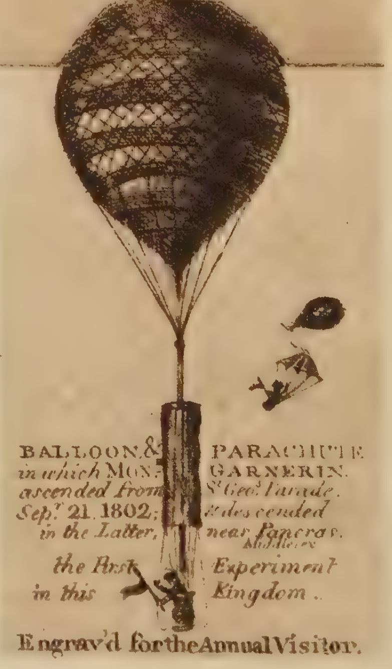
JACOB KAISERER OF VIENNA (1801) made a great stir with his proposal that birds, "the only living things which fully understand flying and air navigation," be utilized in connection with the steering of aerial contrivances.

Men had learned how to rise into the air and sustain themselves there; now let some means be found to direct the course of the balloon in which they rode. Kaiserer wrote a book about this entitled, "*Ueber meine Erfindung einen Luftballon durch Adler zu regieren*" (Vienna, 1801). It was circulated all over Europe and was far more than the mere contribution of another scientist to speculative aeronautical literature.

In this book we find an engraving of the inventor of this scheme in the cup-shaped car of his dirigible balloon driving a pair of harnessed eagles through the sky. The plate (above) is from a copy of Kaiserer's book, now very rare, in possession of the Royal Aeronautical Society (London).

There were numerous other attempts through the following years, to provide dirigibility for the balloon, notably that of George Boyd (1802) who had a mechanical "regulator for steering balloons" on which he sought financial support.

The engraving (right) is a contemporary print of Garnerin's ascent from St. George's Parade, London, at the time of the first parachute descent in England (September 21, 1802).


BALLOON & PARACHUTE
in which MONS. GARNERIN.
ascended from St. Geo. Parade.
Sep.r 21. 1802; & descended
in the Latter, near Pancras.
Middlesex
the First Experiment
in this Kingdom.
Engrav'd for the Annual Visitor.

INVENTOR *Astounds* FRANCE, ENGLAND *and* RUSSIA—1802

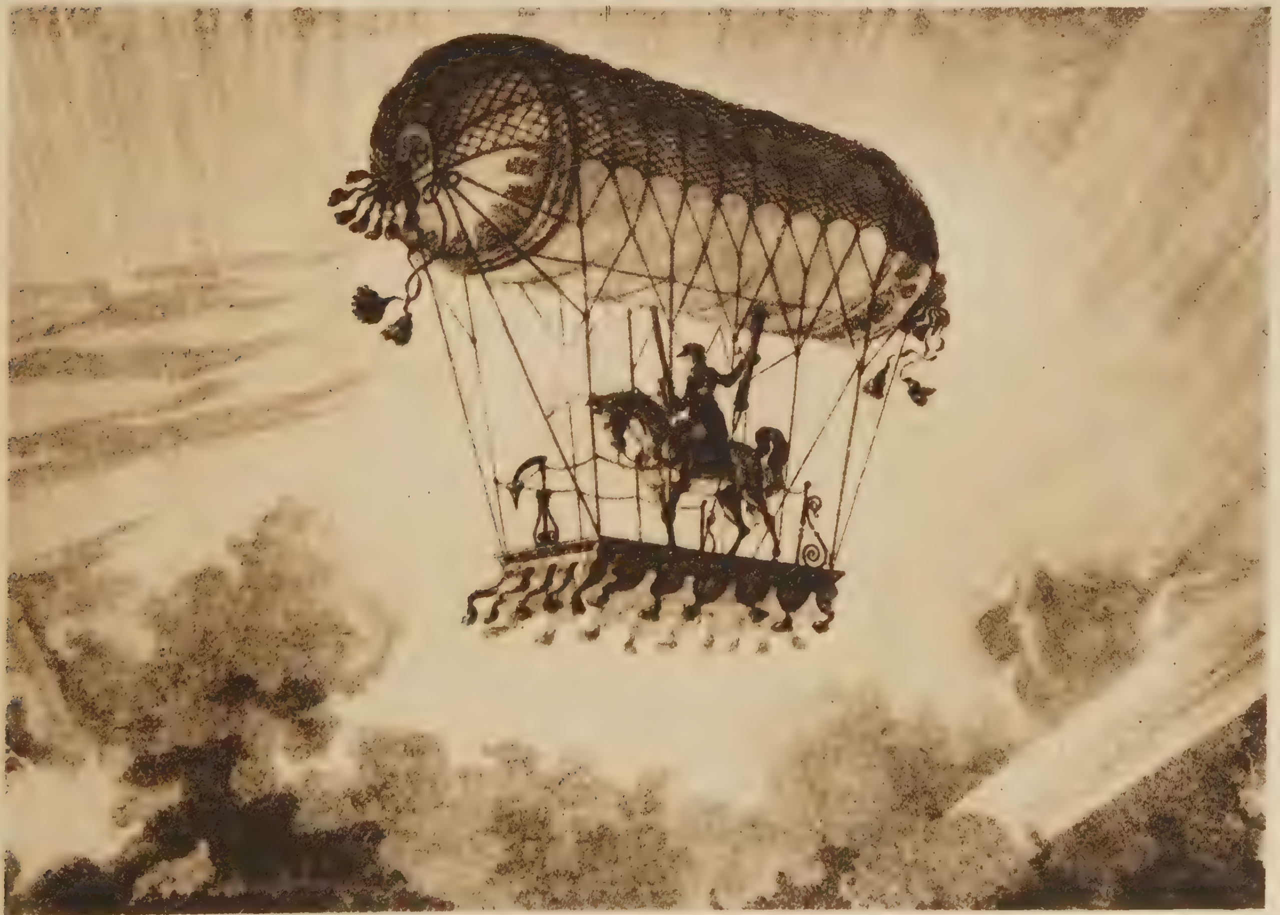
ANDRE-JACQUES GARNERIN, official aeronaut of the French Government during the early days of the Empire (1801), did more to make known and popularize the parachute than any other single man. The Science of Aeronautics owes Garnerin a tremendous debt.

Garnerin, as the "Official Aeronaut," visited not only England, but Prussia, Russia and other countries—after the Peace of Amiens had been signed (1801) he was welcomed at the courts of other European nations—bearing the credentials of his government and making a fine impression through his vivacious personality and scientific knowledge.

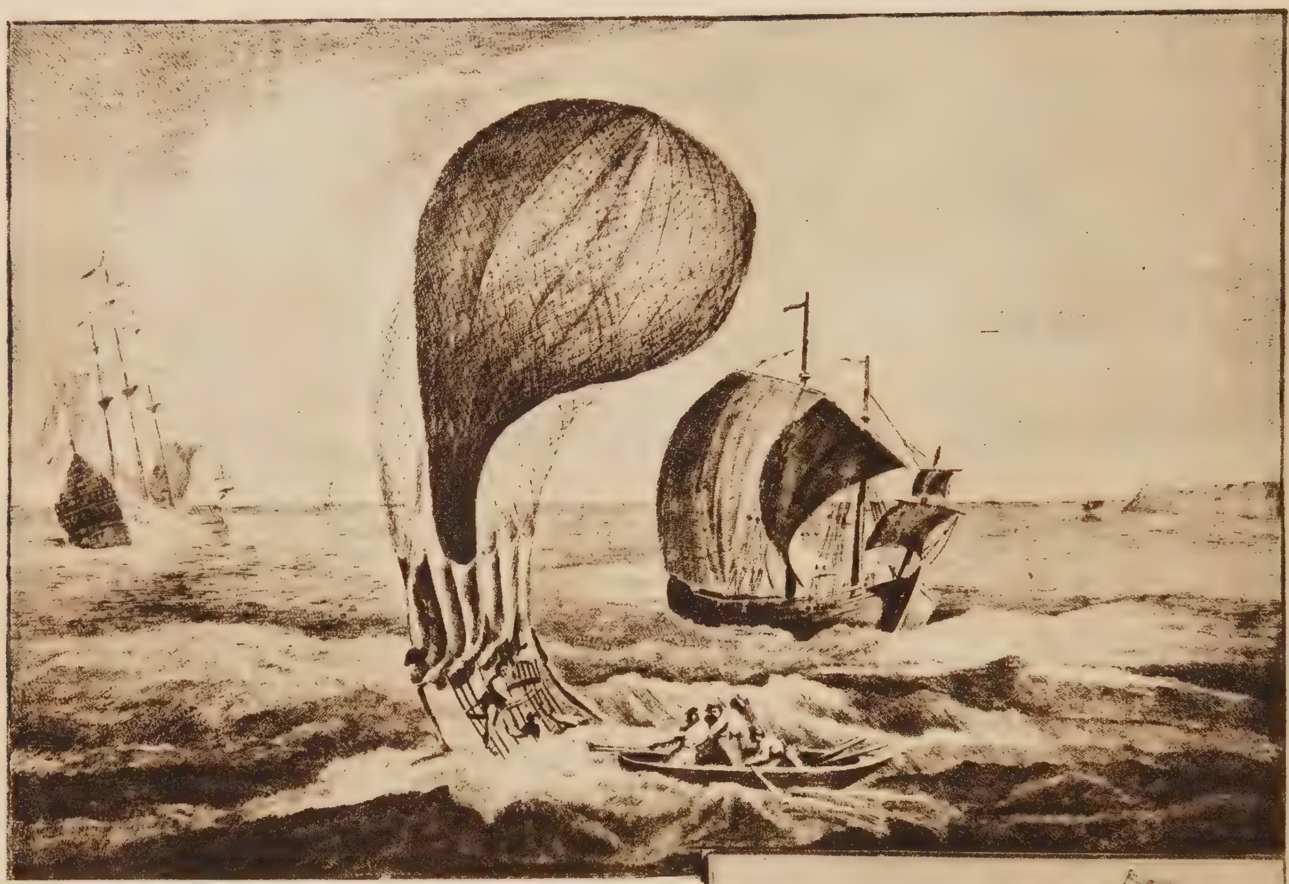
The celebrated Jean-Jacques de Lalande, French scientist and astronomer, became his friend and patron. This is the same Lalande who had once taken the *Paris Journal* severely to task (1782) for the serious attention this dignified journal gave to Blanchard's Flying Machine—and yet a few months later he made a balloon ascension with Blanchard.

In England, scientific experiments favored an "inverted cone, apex downward," as proper form for a parachute. Yet in form Garnerin's parachute differed little from that which finally became standard. Portrait of Garnerin (left) by E. H. Locker (1802).

Pierre Testu-Brissy, French aeronaut, who built a cylindrical balloon in Paris (1798), was the first man to make an equestrian ascent. He rode a horse into the sky, the animal having been trained to stand quiet upon the platform beneath the balloon. The old print (below) is in the Cuthbert Collection in London.



ITALY *Thrilled by* RESCUE *of* ZAMBECCARI *at* SEA—1803



NEAR-TRAGEDY stalks into the aeronautical picture when Zambeccari, Andreoli and Grassetti, three Italian aeronauts known to fame, narrowly escape drowning in the Adriatic Sea (October, 1804).

Count Zambeccari, as we have seen, sent up the first experimental balloon in England, but through a reconciliation with his family returned to his native Italy.

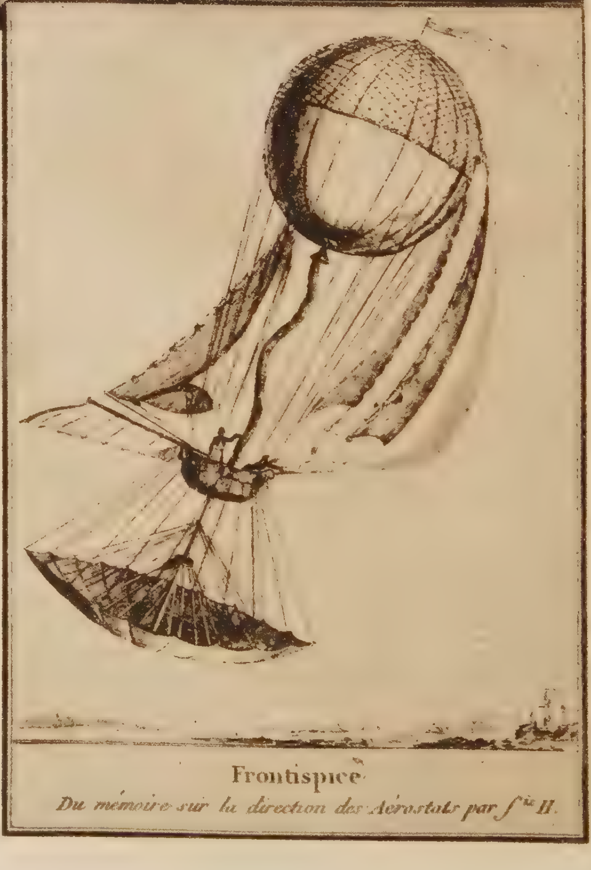
But the French were predominant there—in fact Napoleon was elected president of the Italian (Cisalpine) Republic (1802)—and Zambeccari made his way to Russia. Here he found a friend in Prince Potemkin, favorite of the Empress Catherine II. He became a lieutenant in the Russian Navy and was shipwrecked in the Dardanelles, spending two years and a half in a Turkish prison.

While in prison he wrote a treatise on aeronautics, which was later published (Bologna, 1800). After his release he settled in Italy and renewed his aeronautical experiences. With Pasquale Andreoli, later to make noteworthy balloon ascents in Italy, and their friend Grassetti, he made the ascent (above) from Bologna (October, 1804).

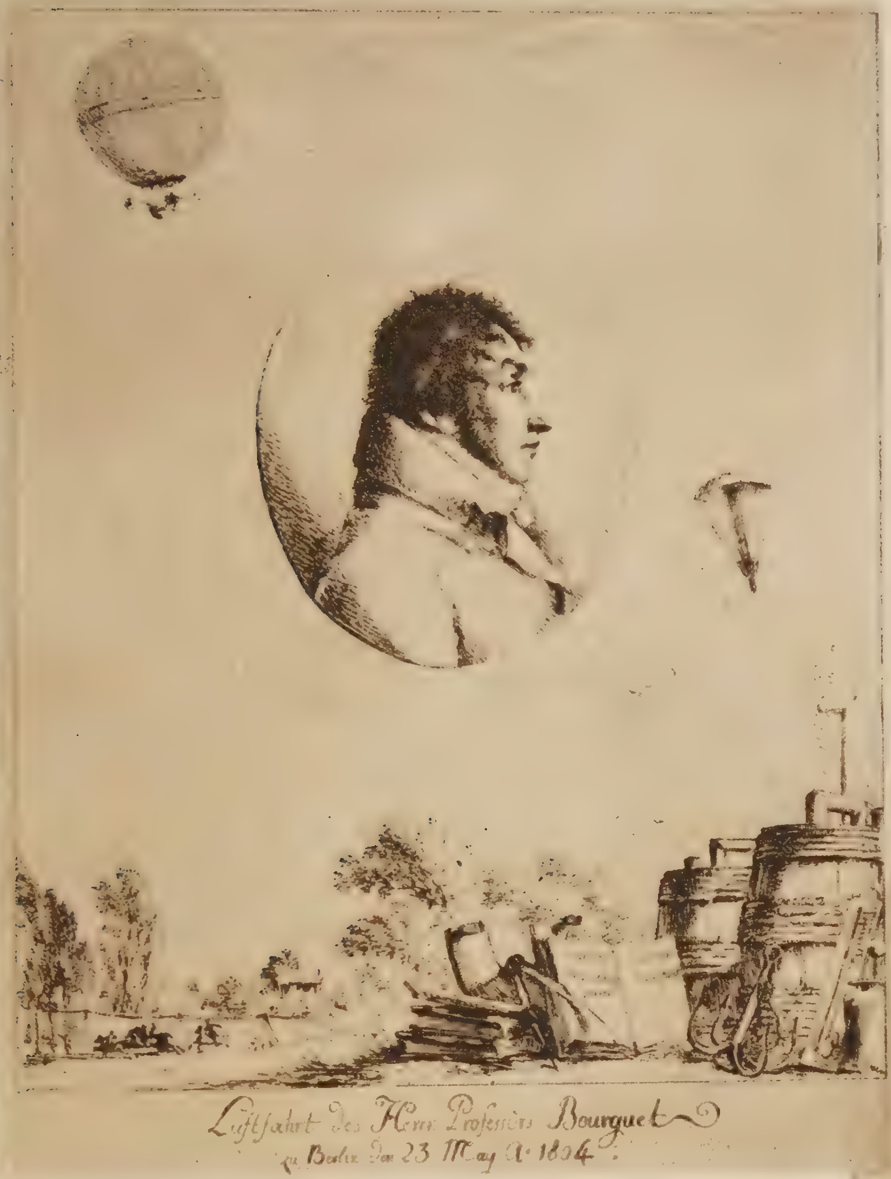
The trio were blown out to sea in the balloon and finally came down in the Mediterranean. They spent an entire night in the water. Their balloon car was submerged and the balloon itself was sinking fast when they were rescued.

Eight years later, Zambeccari was killed at Bologna when he leaped from the car of a blazing balloon. The Print of the rescue (above) is in the Harry Guggenheim Collection.

The engraved plate (right) showing a balloon equipped with sails and a large reversed parachute is in *Memoire sur la Direction des Aerostats* by Felix Henin (Paris, 1802).


Frontispice
Du mémoire sur la direction des Aérostats par f^{x} H.

GERMANY *and* FRANCE *Bring Their Scientists into Action*—1804


Luftfahrt des Herrn Professors Bourguet
zu Berlin den 23 May A° 1804.

GERMAN scientists and experimenters were not idle. Prussia was on the way to defeat by Napoleon at Jena, with his subsequent entrance into the city of Berlin and issuance of the famous Berlin decree against British commerce.

Prussia had her scientists searching every possible agency which would contribute to her ability to defend herself against the all-conquering French. Leaders among these were the Professors Bourguet of Berlin, who were active in balloon experiments and altered somewhat the shape of the parachute hitherto in use.

The Bourguet parachute, as will be noted from the engraving (left) has proportionally much longer cords than Garnerin's and these center in its basket rather than in a ring above it.

This old plate, of a balloon ascent and parachute drop by Professor Bourguet (May 23, 1804) is in the Bella C. Landauer Collection.

SCIENCE, godfather of the balloon, now makes serious use of the new aerostatic vehicle. Through the aerial observations of Joseph Louis Gay-Lussac (1778–1850), distinguished chemist and physicist, French savants became certain that the magnetic attraction of the earth remains the same at four miles in the air as on the earth's surface and that the upper air is no different in composition from that which humans breathe.

Gay-Lussac was especially well informed on gases, their makeup and properties, as shown in his first memoir to the French Academy of Sciences.

Desirous of obtaining knowledge of the force of terrestrial magnetism at great elevations above the earth, the Academy entrusted the task of securing this from balloon observations to Gay-Lussac and J. B. Biot. Their first ascent, from the Conservatoire des Arts, in Paris, gave them an altitude of 4,000 meters (August 24, 1804).

Gay-Lussac ascended alone (September 16, 1804). His instruments registered a height of 7,016 meters above sea level or about 22,892 feet (more than four miles). He made observations on magnetism and on the temperature and humidity of the air—and brought down samples of air at that height. The portrait of Gay-Lussac (right) is from *Galerie des Contemporains Illustres* (Paris, 1810) in the Bella C. Landauer Collection.

M. GAY-LUSSAC.

CORONATION *of* NAPOLEON *as* EMPEROR *of* FRANCE—1804

NAPOLEON
BONAPARTE
Emperor
of France—

Andre-Jacques Garnerin, by Royal appointment "Aerostier des Fetes Publiques," arranges Royal Fete—with gaily-decorated "aerostats" rich with trappings and flying the Napoleonic emblem.

Beneath the huge balloon, girdled with the new French flag, a great Eagle rides surmounted by an immense wreath of laurels.

Current report has this balloon carried over the Alps to Rome, where laurel wreath falls on Tomb of Nero, arousing Napoleon's superstitious ire—and Garnerin loses his new rank.

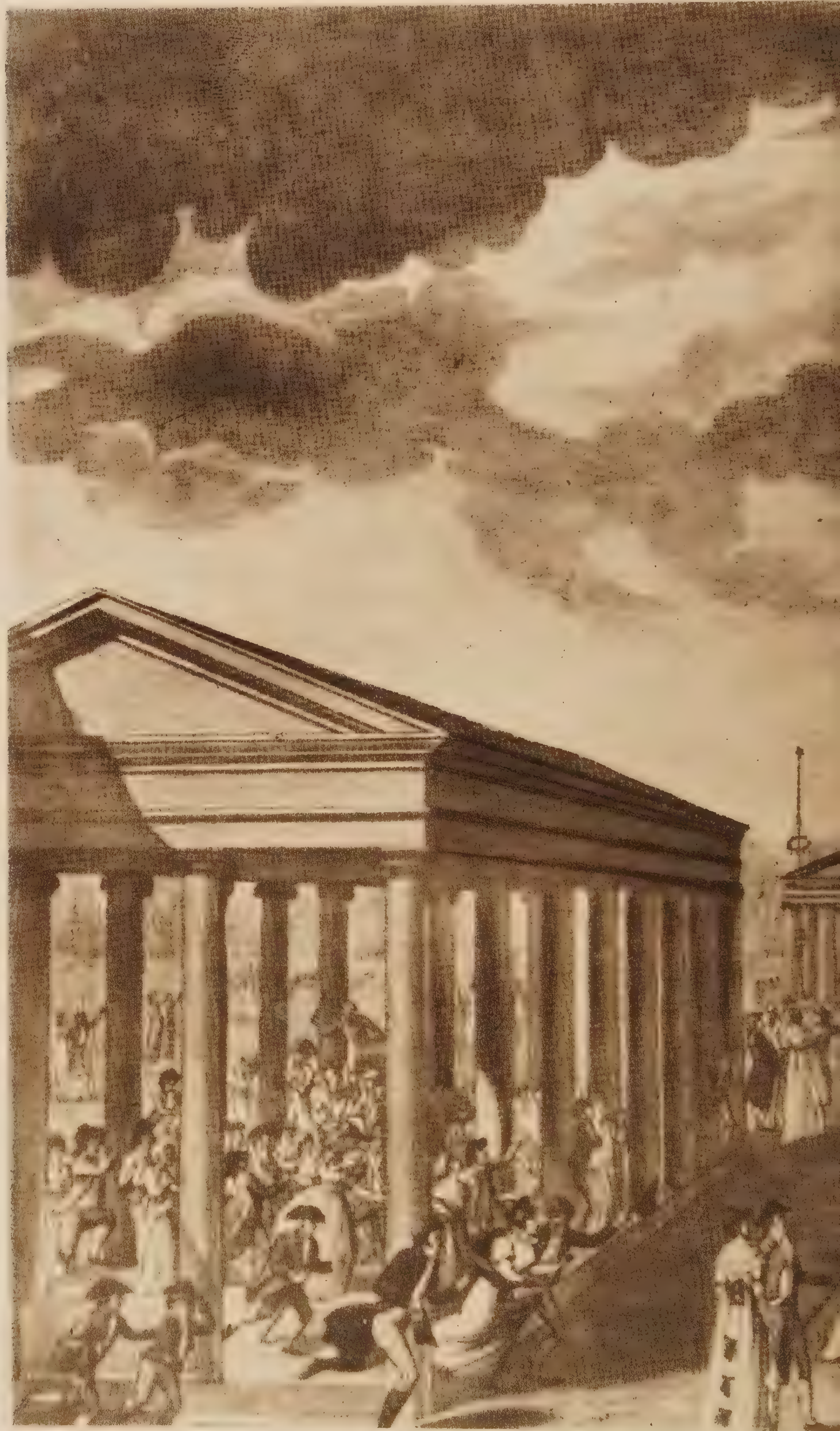
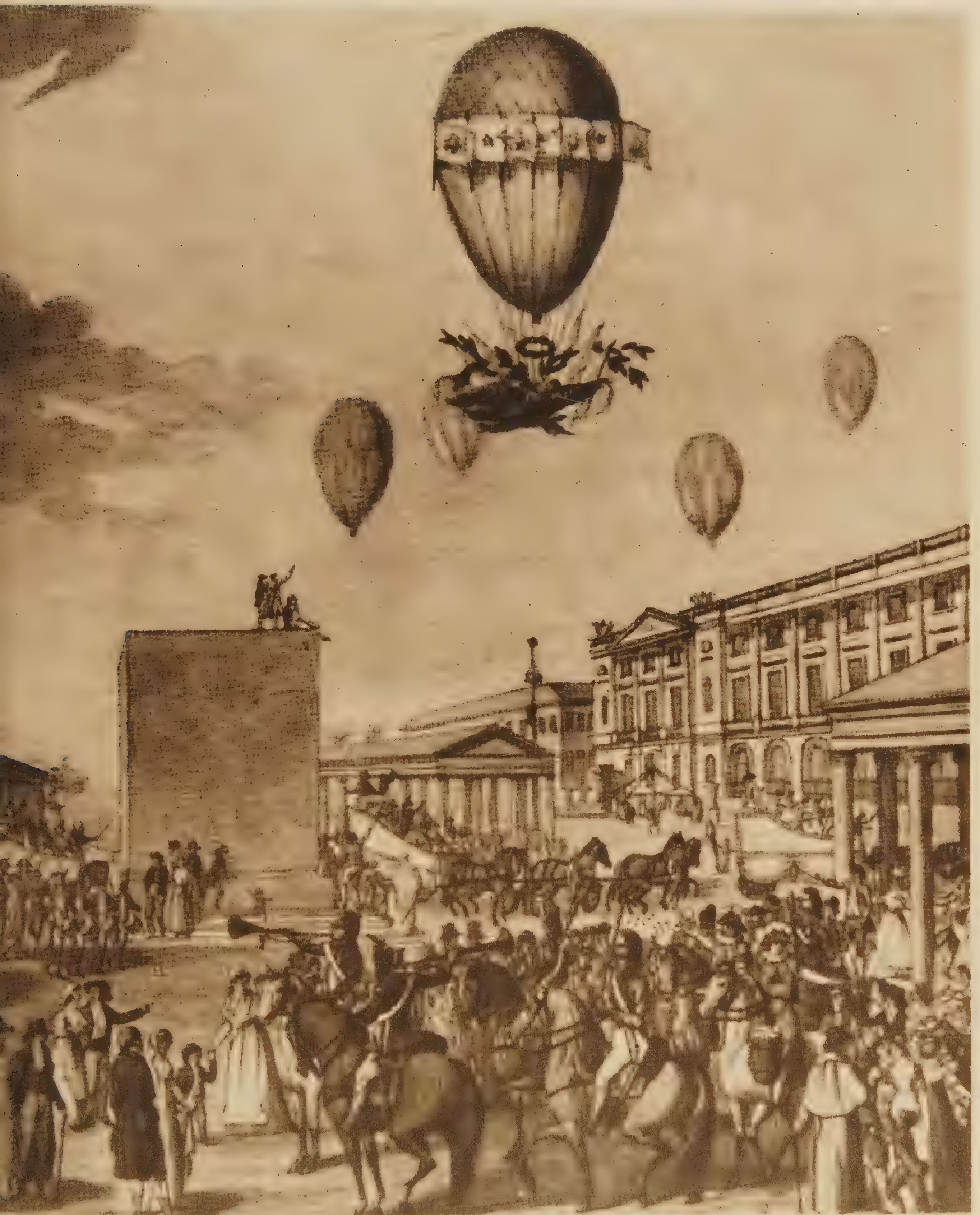
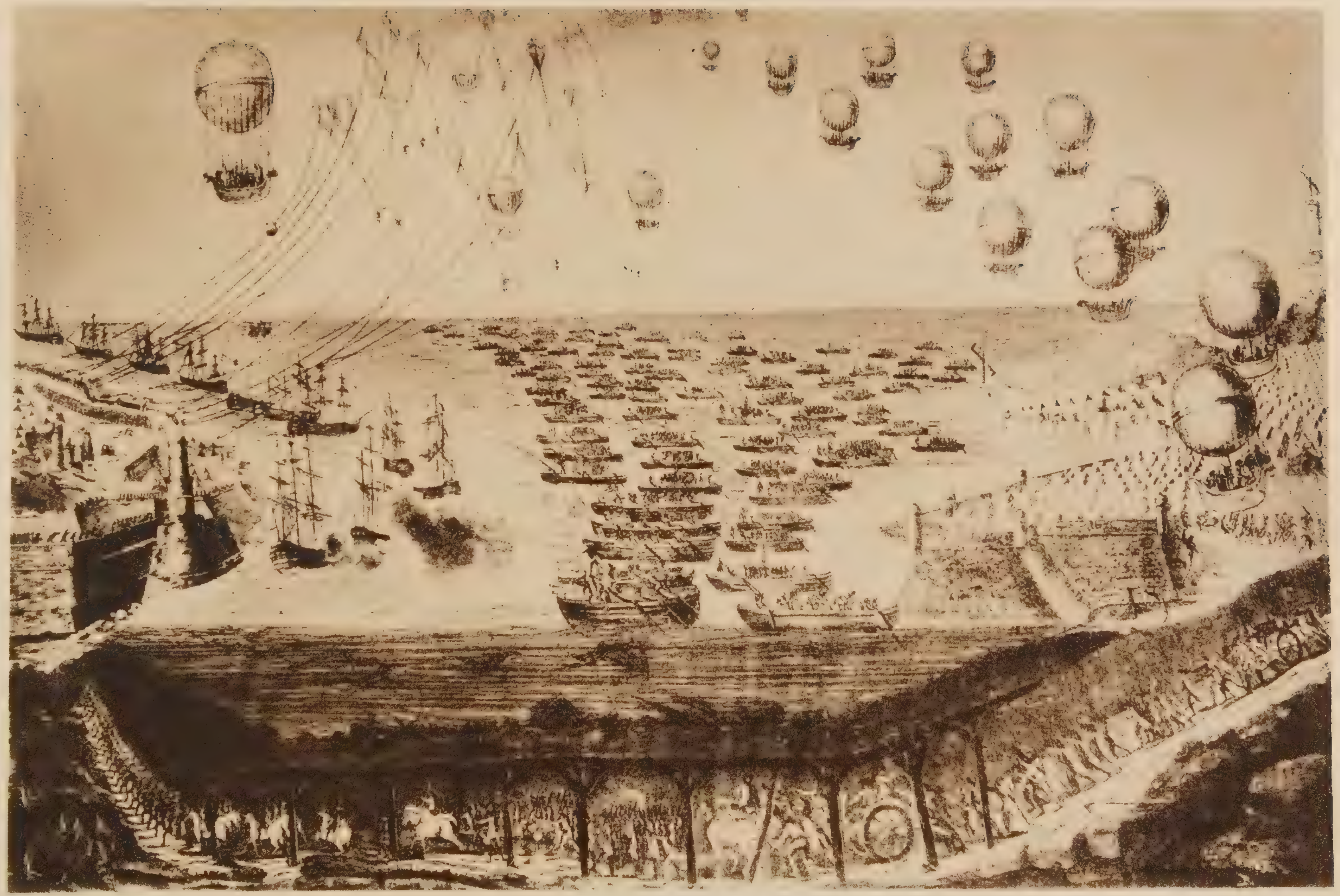


Plate by Marchand after painting, by Royal Command, by Le Coeurs in Bibliotheque Nationale, Paris

Imperial AIR MESSENGERS *Acclaim* NAPOLEON *in* TRIUMPH

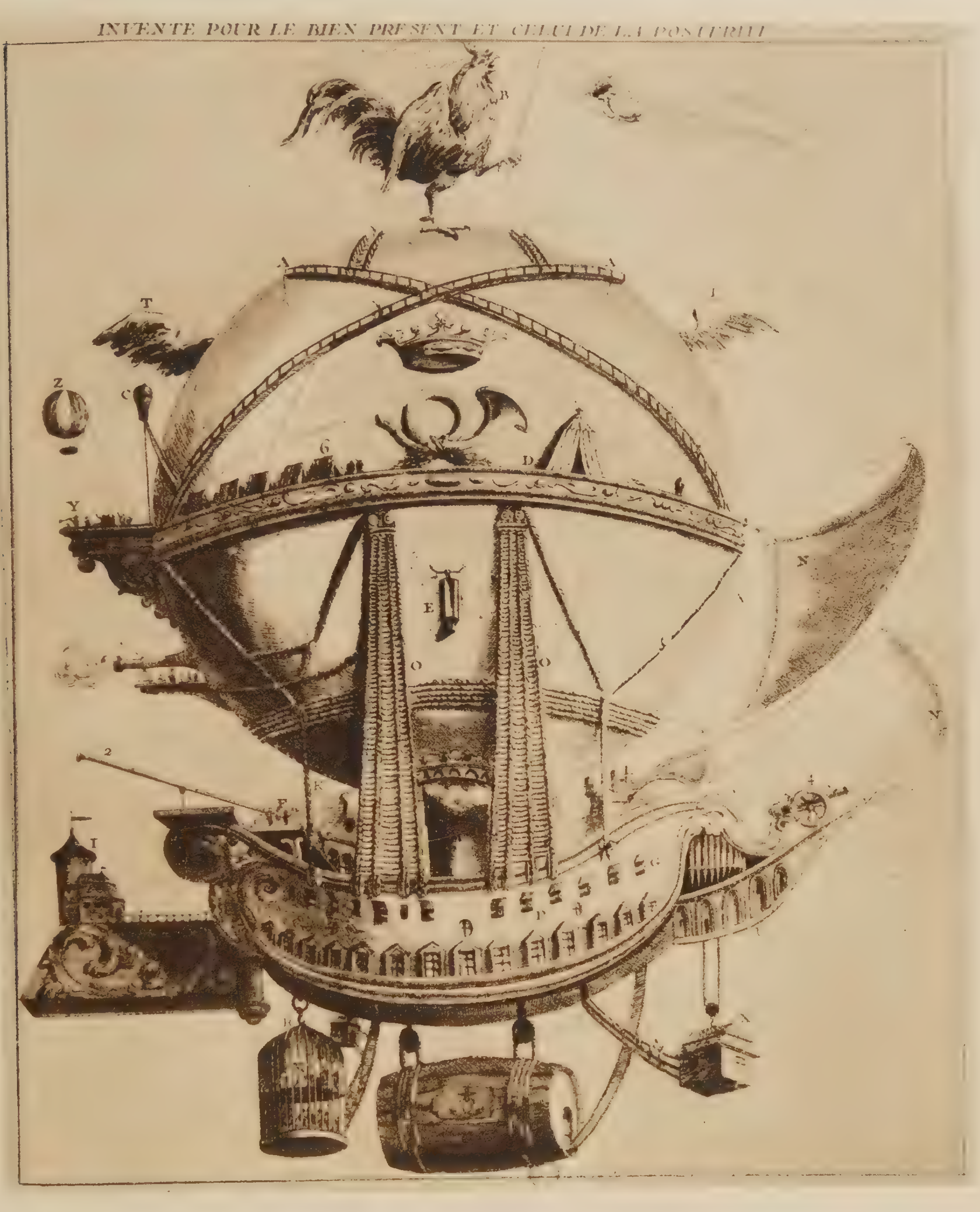




PROJECT *for* "*Grand* DESCENT *on* ENGLAND" *by* AIR—1804

Invasion by Sea— by tunnel under the Sea—and by Air—Proposed in an Anonymous Cartoon (1804) depicting the routes by which Emperor Napoleon, with Europe at his feet, could descend on England. It will be noted that the British in defense from this Napoleonic Conquest are flying captive balloons over Dover, prepared to resist the Invasion by Air—Old print in Bibliotheque Nationale in Paris.

GIGANTIC *Scheme to* FLY *Over* COUNTRIES *of the World*—1804


INVENTE POUR LE BIEN PRESENT ET CELUI DE LA POSTERITE
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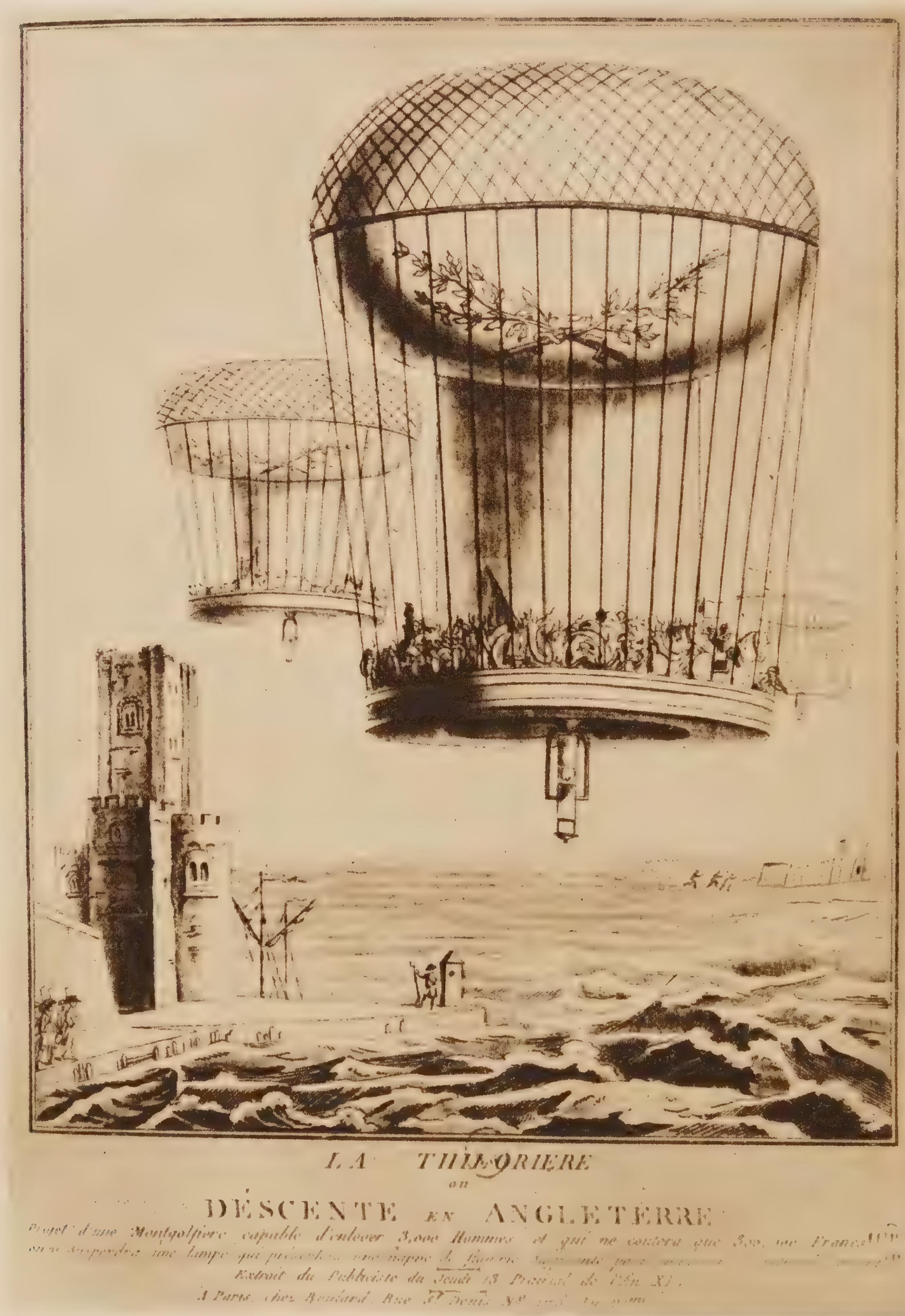
THIS NAPOLEONIC SCHEME for the aerial invasion of England is the product of one of the most vivid imaginations the world has known—Marey Monge, French Advocate of the Revolution.

He visioned a balloon which the word colossal barely begins to describe—a mighty aerostat which would accommodate more than four thousand persons—upon which they could live for months and years.

In this an army could voyage from hemisphere to hemisphere and from Pole to Pole. Imagine what defense any nation would have against the invasion of such a craft bearing an army. Such was Citizen Monge's "Grand Republican Balloon Intended to Convey the Army of Invasion to England from the Gallic Shore." This historic print is in the Collection of Sir David Salomans, Bart.

Proposed SIEGE *of* ENGLAND *by* "CAVALRY BALLOONS"—1805


LA THILORIERE
ou
DÉSCENTE EN ANGLETERRE
Projet d'une Montgolfiere capable d'enlever 3,000 Hommes et qui ne coutera que 300,000 Francs
Extrait du Publiciste du Jeudi 13 Prairial de l'An XI.
A Paris, chez Basset, Rue St. Denis

THE FRENCH AVOCAT THILORIER came forward (1805) with this proposal of Great Balloons to take troops across the English Channel for the invasion of Great Britain. His balloons were planned to carry 3,000 horse troops each and to cost 300,000 francs. Engraved print in Bibliotheque Nationale in Paris.

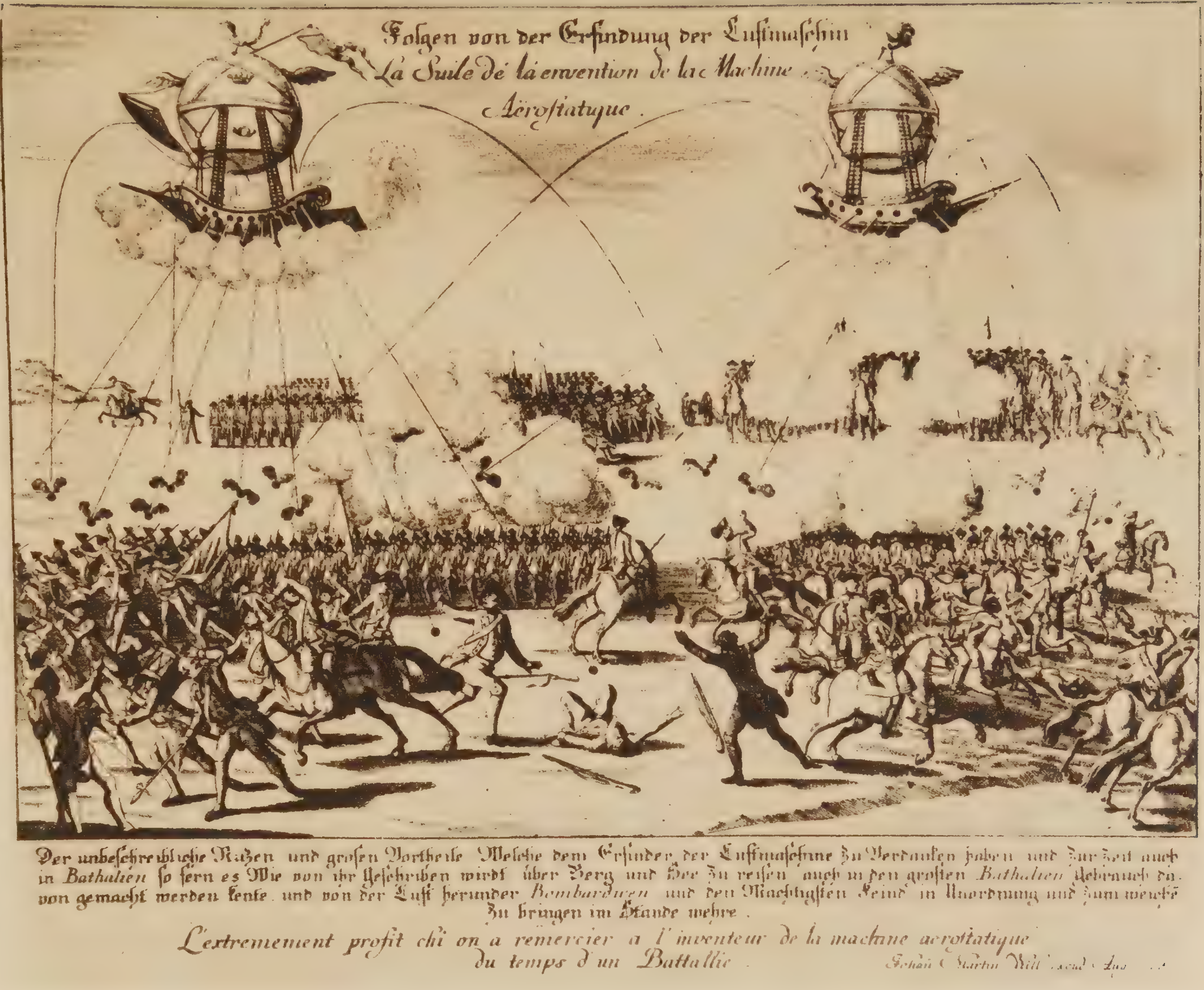
GERMANY PROPOSES WAR in the AIR

The Prussians, fully conscious of the possibilities of the Air as a military arm, carried the plan even farther than the French.

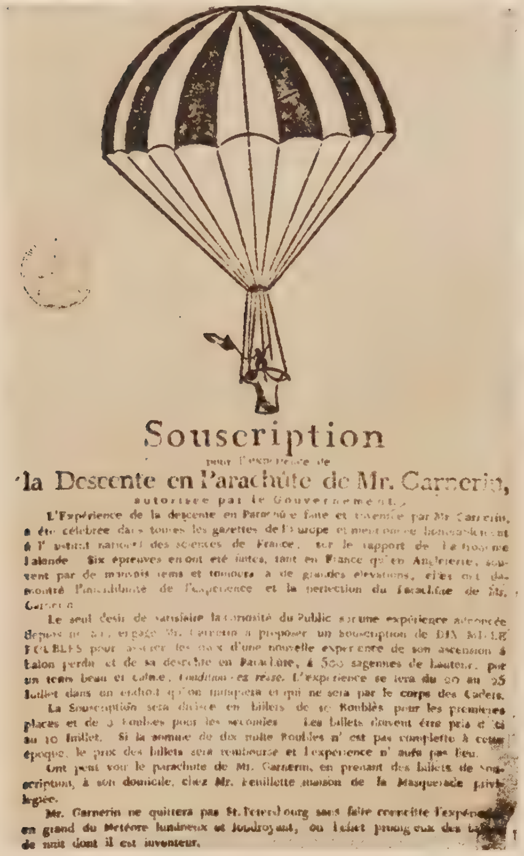
The scientific minds of the Prussian General Staff saw opportunities for destructive warfare in the air—not only by the use of great balloons carrying hundreds, possibly thousands, of men, with supplies and munitions, but with an armament which would make possible the sudden destruction of armies on the earth below.

Indescribable damage could be done an enemy in Aerial Warfare, against which no nation would have adequate defence.

Engraving by Johann Martin Will in Collection of Baron Carl de Vinck.


Folgen von der Erfindung der Luftmaſchin
La Suile de la envention de la Machine Aërostatique.
Der unbeſchreibliche Nutzen und groſen Vortheile Welche dem Erfinder der Luftmaſchine Zu Verdanken haben und Zur Zeit auch in Bathalien ſo fern es Wie von ihr Geſchriben wirdt über Berg und See Zu reiſen auch in den groſten Bathalien Gebrauch da. von gemacht werden kente. und von der Luft herunder Bombardiren und den Machtigſten Feind in Unordnung und Zum weiche Zu bringen im Stande wehre.
L'extremement profit chi on a remercier a l'inventeur de la machine aerostatique du temps d'un Battallie.
Johan Martin Will excud. Aug.

SAILING AIRSHIP *Competes with* FIRST STEAMSHIP—1807



Souscription

pour l'expérience de

la Descente en Parachûte de Mr. Garnerin,

autorisée par le Gouvernement.

L'Expérience de la descente en Parachûte faite et inventée par Mr Garnerin, a été célébrée dans toutes les gazettes de l'Europe et mentionnée honorablement à l'Institut national des sciences de France, sur le rapport de l'astronome Lalande. Six épreuves en ont été faites, tant en France qu'en Angleterre, souvent par de mauvais tems et toujours à de grandes élévations, elles ont démontré l'infaillibilité de l'expérience et la perfection du Parachûte de Mr. Garnerin.

Le seul désir de satisfaire la curiosité du Public sur une expérience annoncée depuis un an, engage Mr. Garnerin à proposer une Souscription de DIX MILLE ROUBLES pour assurer les frais d'une nouvelle expérience de son ascension à ballon perdu et de sa descente en Parachûte, à 500 sagennes de hauteur, par un tems beau et calme, condition expresse. L'expérience se fera du 20 au 25 Juillet dans un endroit qu'on indiquera et qui ne sera pas le corps des Cadets.

La Souscription sera divisée en billets de 10 Roubles pour les premières places et de 3 Roubles pour les secondes. Les billets doivent être pris d'ici au 10 Juillet. Si la somme de dix mille Roubles n'est pas complette à cette époque, le prix des billets sera remboursé et l'expérience n'aura pas lieu.

On peut voir le parachûte de Mr. Garnerin, en prenant des billets de Souscription, à son domicile, chez Mr. Feuillette maison de la Masquerade privilégiée.

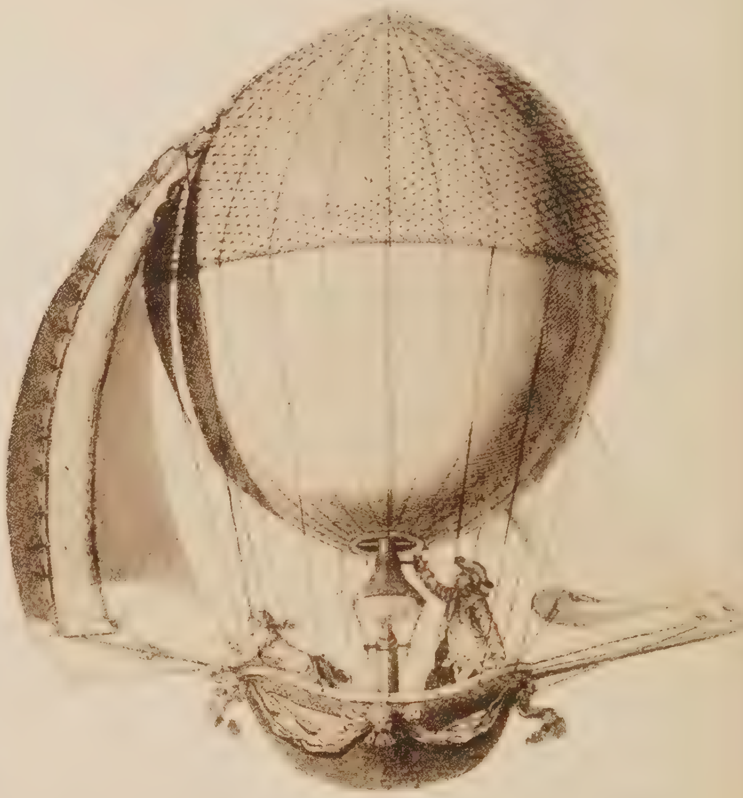
Mr. Garnerin ne quittera pas St. Petersbourg sans faire connaître l'expérience en grand du Météore lumineux et foudroyant, ou l'effet prodigieux des [illegible] de nuit dont il est inventeur.

THE SEA now defeats the Air—with a tremendous forward advance. While the air is still imitating the sailing vessels with wind as the motive power, the sea comes forward with a new power—steam. The American engineer, Robert Fulton (1765–1815) has been living in Paris during these stirring times of Aerial Exploration, and has succeeded there in first propelling a boat by steam-power (1803).

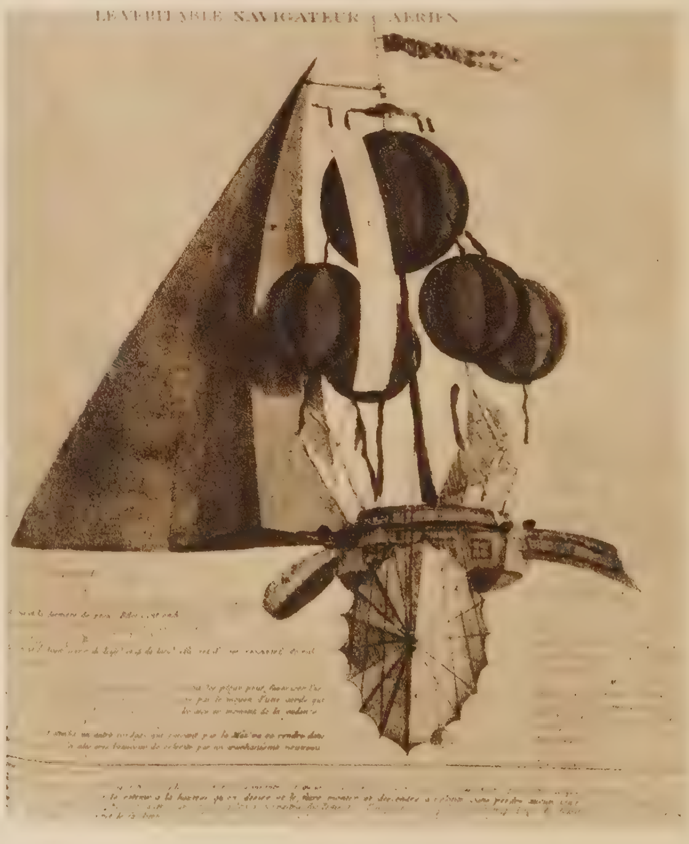
Fulton returns to America to build the Clermont (below), the World's First Steamboat—to ply between New York and Albany (1807).

The race between the Sea and the Air is now on. L. J. Stoupy-Bijou (France) suggests a Sailing Airship with the use of a number of balloons fastened to a boat to sustain it in the air (right). Old print in color in Bibliotheque Nationale in Paris.

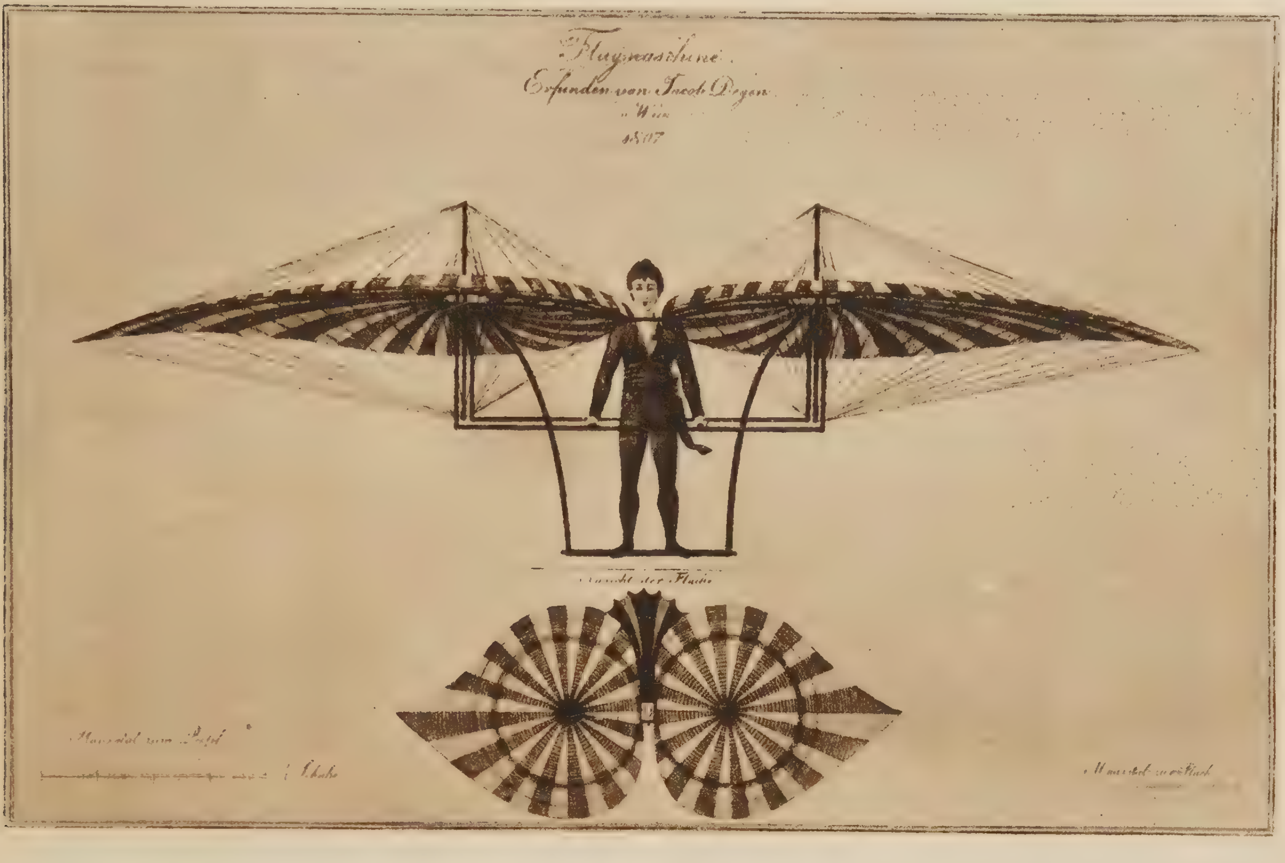
Broadside (above) issued by Garnerin to announce a parachute descent in St. Petersburg (1805). Woodcut of Garnerin in parachute car at top.



EARLY IDEA OF DIRIGIBLE BALLOON—(1807)
Engraved print in Bibliotheque Nationale in Paris.



"FLUGMASCHINE" *in which* "EVERY MAN CAN FLY"—1807



JACOB DEGEN, Vienna clockmaker, had continental Europe on the qui vive for half a decade. His "Flugmaschine" was another attempt to adapt bird flight to a flying machine.

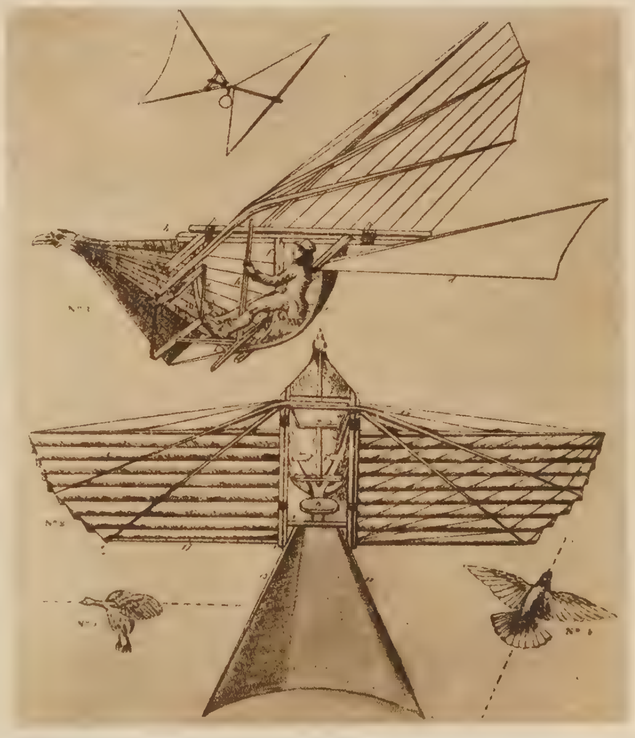
Degen's famous apparatus consisted of umbrella-like wings of taffeta, shaped like an aspen leaf, attached to a central stick by many small cords. The taffeta was loosely fastened to simulate somewhat the action of bird feathers when Degen beat these wings rapidly. He claimed to have raised himself thus many feet in the air before making his flying machine public.

We shall see how he came out in Paris (Page 242), but it is well to remember that a century and a quarter afterward men are still trying to do practically the same thing that Degen tried.

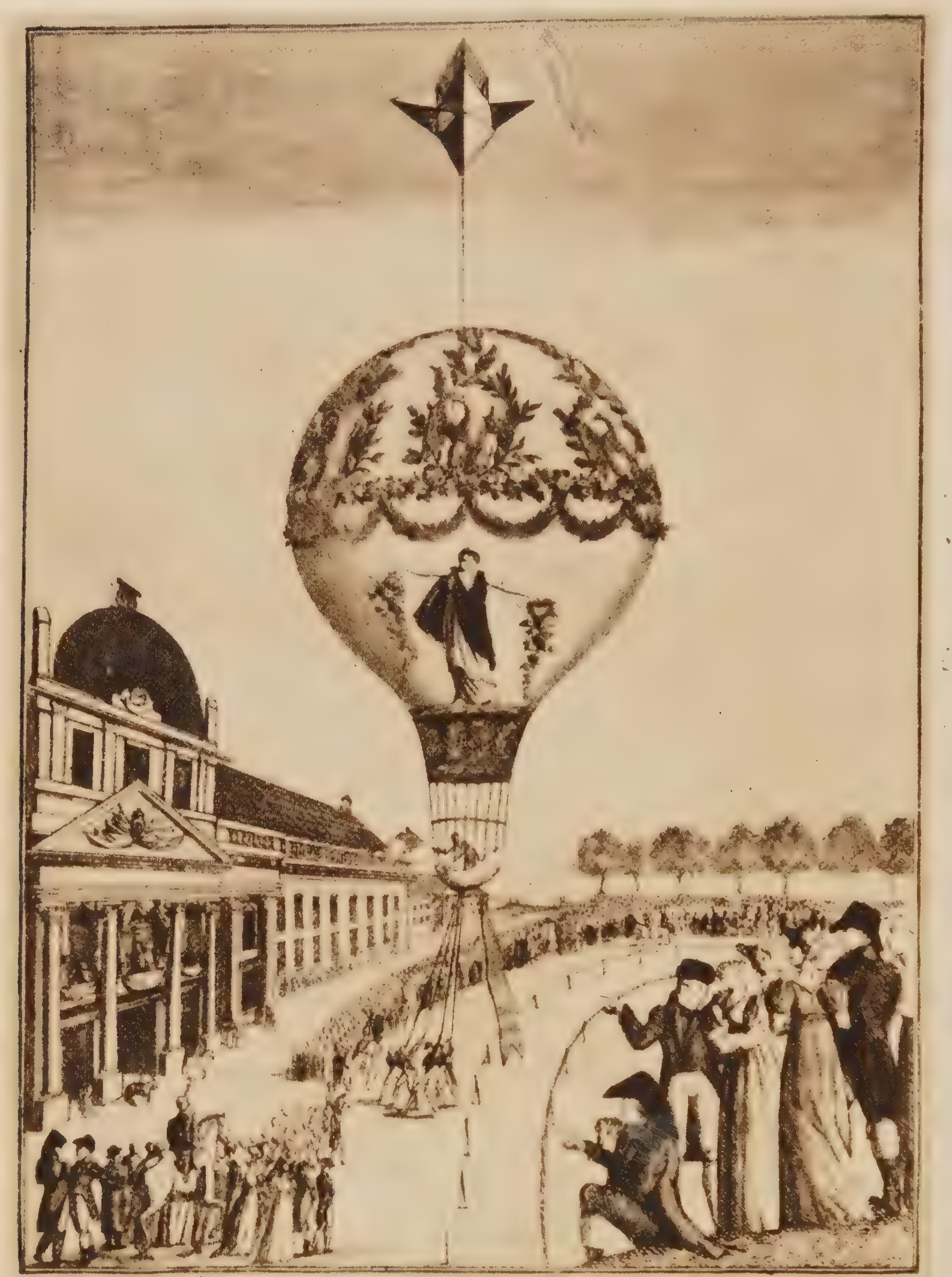
England took small stock in Degen, but supported Thomas Walker (1785–1835), a portrait painter of Hull, who proposed a mechanical bird (1810) which, unlike Degen, he never constructed. He gave the fullest expression to his theories in "*A Treatise upon the Art of Flying by Mechanical Means*," which caught the serious attention of all Great Britain and ran into several editions in the next twenty years. The book was better known than its author.

The Degen print (above) is in the Cuthbert Collection in London. The Walker print (right) is the frontispiece of a first edition of *A Treatise upon the Art of Flying* (Hull, 1810).

"FLIVVER FLYING MACHINE"—"Ford of the Air"



At the WEDDING *of* NAPOLEON *and* MARIE LOUISE—1810



VUE PERSPECTIVE DU CHAMP DE MARS

Le Jour de la Fête donnée le 24 Juin 1810, par la Garde Impériale à leurs Majestés en l'honneur de la célébration de leur Mariage le Sujet représente l'instant où le Ballon dirigé par Mme Blanchard s'est porté vers l'École Militaire où assistoient l'Empereur et l'Impératrice avec toute la Cour

[illegible]

THIS IMPERIAL BALLOON ascension was decreed by Napoleon to honor his wedding—in a great Napoleonic celebration in Paris. A "Grand Aerostat" beautifully decorated, rises from the Champ de Mars (June 24, 1810) with the most noted woman aeronaut of her time throwing kisses to the multitude.

Madame Marie Blanchard, widow of the great Jean-Pierre, premier aeronaut of France, now carried on after his death (March 7, 1809).

All the pomp and ceremony of a Royal Fete possesses Paris, celebrating with gay abandon the marriage of Napoleon and Marie Louise of Austria. The marriage had taken place by proxy in Vienna three months before (March 11, 1810) and now the royal bride was with her imperial bridegroom in his beloved Paris.

All Paris was joyous—celebrating the auspicious events with a magnificent balloon ascension by a woman aeronaut!

Napoleon must have a son—to found a Napoleonic dynasty. Josephine had borne him none. He had put her aside by divorce to consummate a royal alliance. The honeymoon was being celebrated at the palace of Compiegne.

The Austrian chancellor, Metternich, who had first suggested the alliance, wrote of Napoleon, "He is so much in love with her (Marie Louise) that he cannot conceal his feelings, and all his customary ways of life are subordinate to her feelings."

MADAME BLANCHARD—MOST NOTED WOMEN AERONAUT OF HER DAY—She ascends from Champ De Mars in Honor of Napoleon and Marie Louise. Contemporary colored print now in the Collection of the Bibliotheque Nationale in Paris.

PART XII

FALL *of* NAPOLEON—*Great* EVENTS *in the* AIR

ENGLAND *Gives* STEAM LOCOMOTIVE *to the* WORLD—*And then* WATERLOO

THE CRISIS is reached. Three events are to take place which will change the course of human history. Napoleon is to be removed from the human scene and a greater force is to take his place. America is to win its second War for Independence—its freedom on the seas. But last and more important—England, winning at Waterloo, and losing in America, is to gain the greatest victory of all—a discovery (an invention) that is to expand the whole world and reconstruct civilization.

The Second War between Great Britain and America breaks (1812) while Napoleon is ravaging Europe. England is pressed on every side—at home and abroad. Moscow is burning (1812); Perry is winning his victory on Lake Erie—on the other side of the world (1813); Russia, Prussia and Austria are uniting against Napoleon. He wins at Dresden and is decisively beaten at Leipzig, while Wellington is driving the French from Spain (1813).

Out of this chaos, comes the power that is mightier than all—the invention of the steam locomotive (1814), by a humble mechanic in an English village (Stephenson), which is to rebuild the economic system of the world, increase its wealth a hundred thousand fold, and create a New Era for mankind—the forerunner of the next great era of locomotion in the air.

While this was occurring, Napoleon was abdicating his power in Paris (1814)—banished to Elba, only to return for a last grand effort to restore his might—to meet his final defeat at Waterloo (1815)—to be exiled to St. Helena—and six years later to die in banishment.

Thus, we witness a great power *going*—and a greater power *coming*. Which has been the larger benefactor to mankind? To which is the world more indebted? Does not one great invention exceed in importance all the wars in the world? What did Napoleon contribute to the welfare of the human race? And, on the other hand, is it possible even to calculate what the invention of the steam locomotive (with the railroads it brought) has done for human progress throughout the nations of the earth?

This same estimate of values applies to the progress of the Science of Aeronautics and its steady development as we are witnessing it in these pages. During the period of carnage brought to this climax (1815) it gave way to warfare. Cayley, the "Father of British Aeronautics," continued his experiments: Degen appeared with his Flying Machine; Sadler continued his ascents in England and Ireland; Walker presented his scientific researches on the "Art of Flying by Mechanical Means" and Zambeccari, returning from England to his home-land in Italy, is killed near Bologna.

We call your attention especially to the rare Napoleonic prints, recording these historic events, with this speculation: If Napoleon had given more consideration to the development of the invention which France had just given to the world—the "Montgolfiere"—with its possibilities in warfare (which were developed just a century later in our World War)—would history have another story to record?

"*Celebre* AERONAUTA" *Before* ROYAL *Family at* MILAN—1811

MADAME MARIE Blanchard was the most famous woman aeronaut of her day ("aeronaute" in French; "aeronauta" in Italian). After the death of her husband, the great Jean-Pierre Blanchard, she made numerous ascents in France and Italy, many of them of an official character.

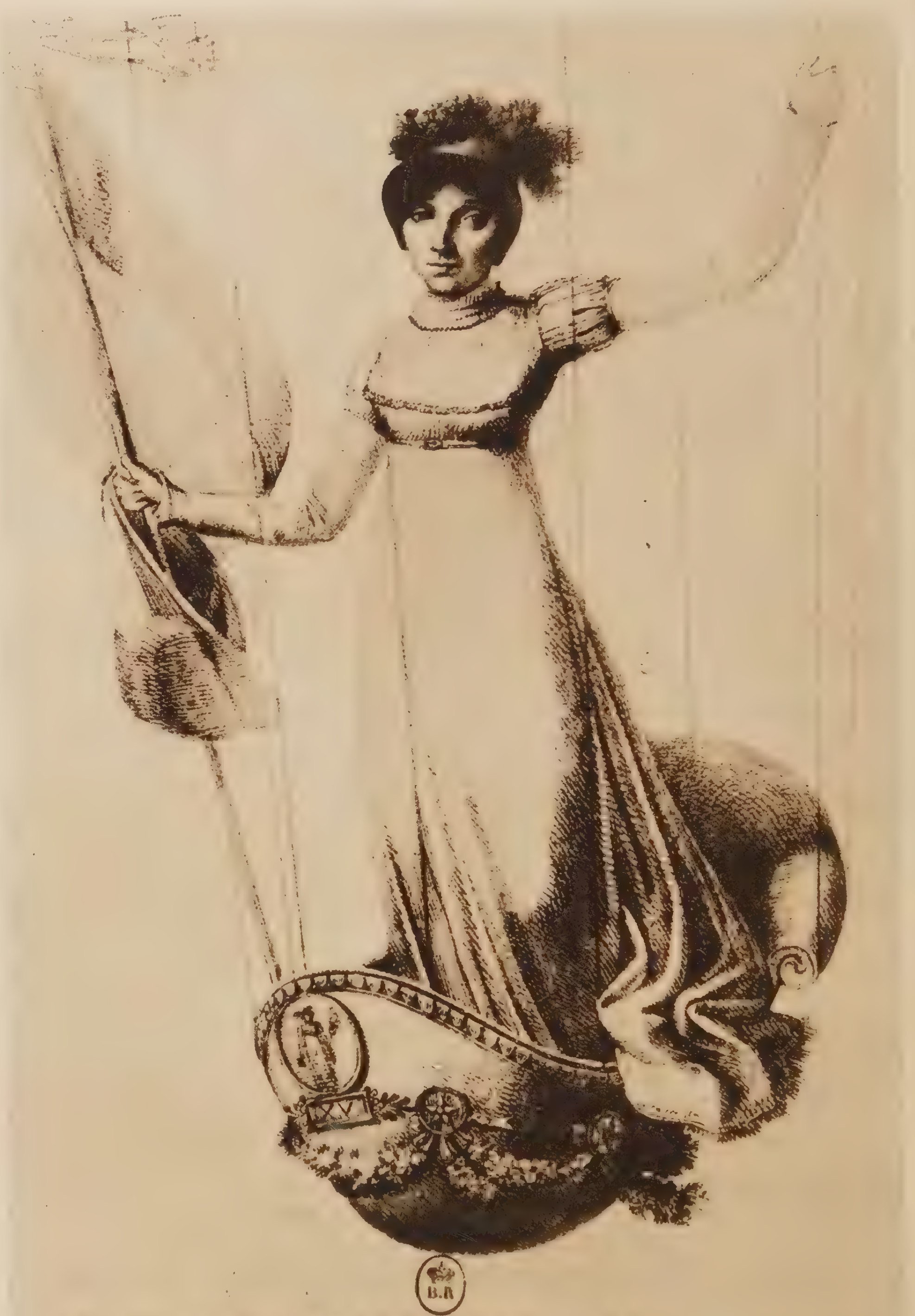
The daring Madame was a favorite with Napoleon and Marie Louise. Her distinguished husband had been seized with apoplexy in mid-air on his sixtieth ascent from The Hague (February, 1808) and never quite recovered. He died in Paris a year later (March 7, 1809).

Madame Blanchard we have just seen in her ascension from the Champ de Mars, during the celebration of the marriage of Napoleon and Marie Louise (Page 238). In the Paul Tissandier Collection (Paris) is a letter written by Madame Marie to the Comte Frochet, Prefect of the Seine, on that day (June 24, 1810) in which she bespeaks his protection during her ascent.

Among her other ascents before Napoleon and his new Queen was that at the "Fete de l'Emperor" at Milan, Italy (August 15, 1811). Original print is in the Bibliotheque Nationale.

On the restoration of Louis XVIII to the French throne (1814). Madame Blanchard became "Official Aeronaute of the Restoration" and made further ascents over Paris.

The adventurous Madame was killed late that year by a fall from her burning balloon, which caught fire over Montmartre and was entirely consumed ("bientot consume"), its occupant falling on the roof of a house at 16 Rue Provence.



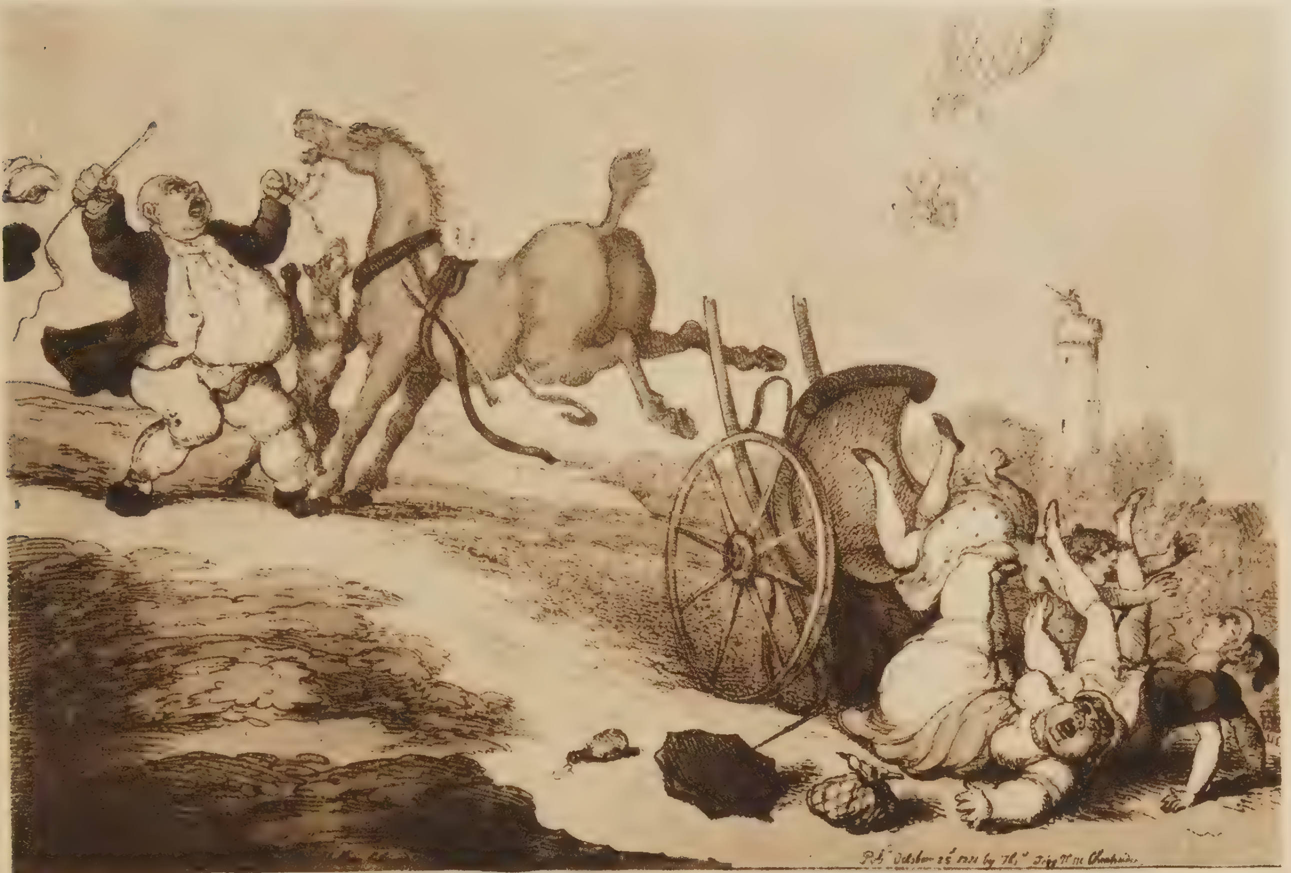
M. S. BLANCHARD celebre aeronauta

al momento del volo aerostatico da Lei eseguito in Milano

in presenza delle LL. AA. II. e RR.

la sera del 15. Agosto 1811.

Famous ROWLANDSON *Cartoon of Events in* ENGLAND—1811



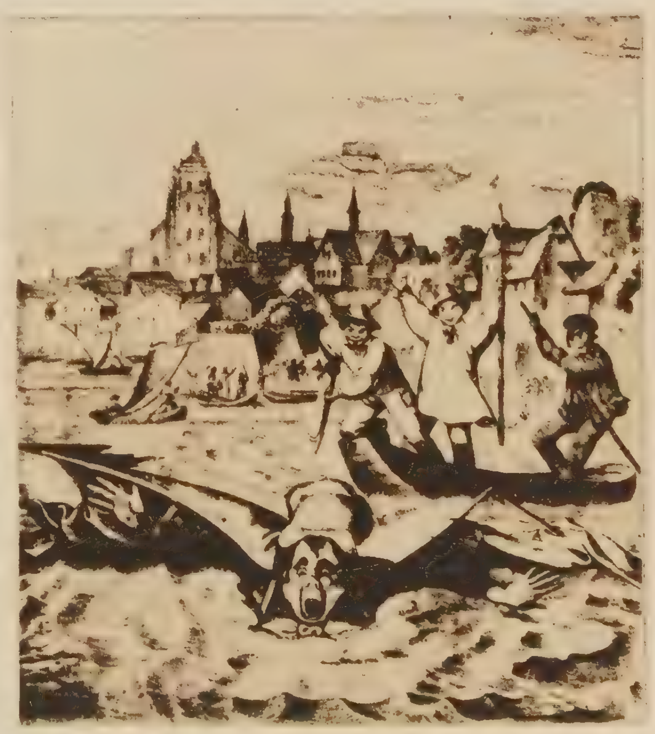
"RURAL SPORTS—BALLOON HUNTING"—Cartoon by the great English caricaturist, Thomas Rowlandson (1811). "The Flying Schneider von Ulm" rescued in the Danube (below).

AERIAL ADVENTURES took a firm grip on the English mind, as is shown by their frequent appearance in caricature.

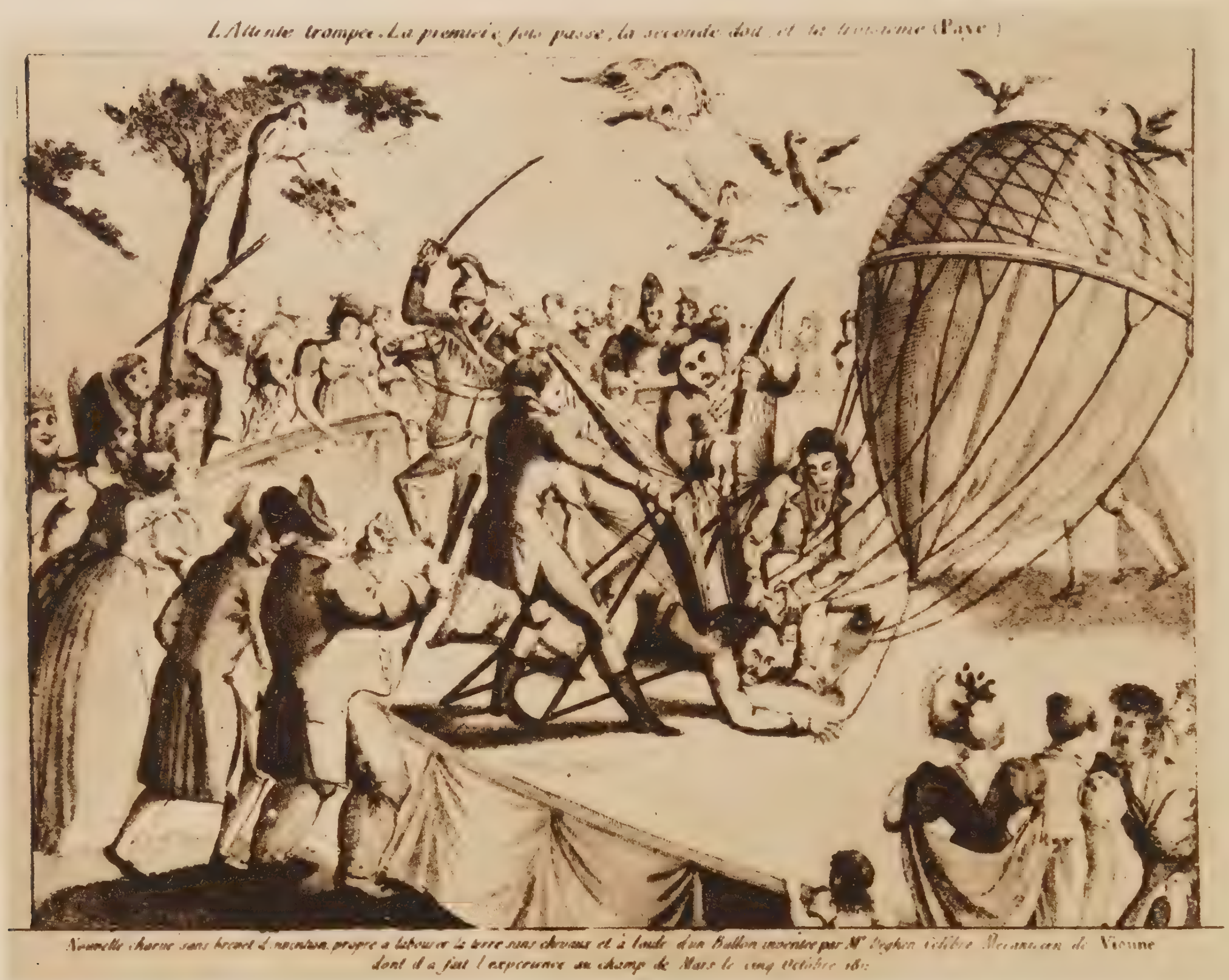
Hogarth lived in an age which had not yet reached the balloon, but among his successors Cruikshank, Rowlandson and Tenniel, gained wide reputation with their satires on Aerial Locomotion, which pointed many a moral.

The balloon cartoon (above) is by Thomas Rowlandson (1756-1827). No caricaturist better understood "the England of roast beef and ale." The feminine parachutist has left the balloon on her way back to earth and is being shot at by a gunner atop a tower; while the wigless squire below has his hands full holding his mettlesome mare, which has broken the shafts and kicked over the cart, spilling its female occupants in a heap.

In Germany we find the Teuton inventive genius still busy with the flying machine, as distinct from the balloon. The old print (right) pictures the parlous experience of the "Flying Schneider von Ulm" (the Tailor of Ulm—1811). He built himself wings and essayed to fly in emulation, perhaps, of the Flying Friar, Kaspar Mohr, of two centuries before. Here we see him in the Danube River (May 31, 1811) being rescued after he had failed in the attempt to give the populace an exhibition of human flight.



Caricaturists JEER *at* "DREAM *of the* FLYING MACHINE"—1812


L'Attente trompée. La première fois passé, la seconde dou . et la troisième (Payé)
Nouvelle charue sans brevet d'invention propre a labourer la terre sans chevaux et à l'aide d'un Ballon inventée par Mr Deghen célèbre Mecanicien de Vienne dont il a fait l'experience au champ de Mars le cinq Octobre 181

THE VIENNESE CLOCKMAKER, DEGEN, finally brought his flying machine to Paris (1812) after five years of experiment and improvements at home. Three times he attempted to fly it, aided by a balloon which lifted more than half the weight of apparatus and operator—and crashed in the Paris streets on the third attempt.

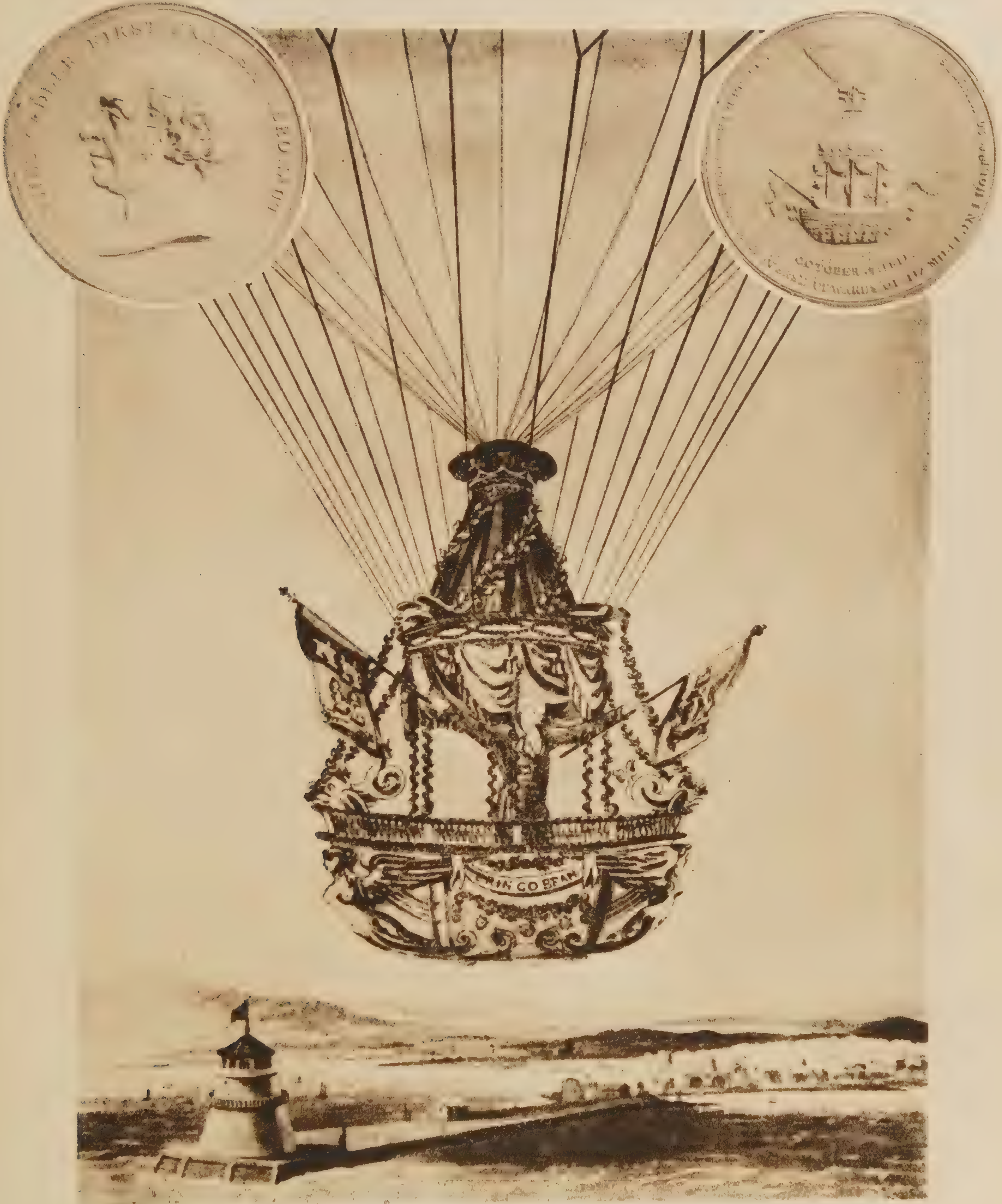
Degen claimed to have risen to a height of 54 feet in Vienna (1809), merely by the rapid beating of his artificial wings, in the presence of a large assemblage of people. The newspapers there took up the matter and gave him much favorable publicity, but they neglected to state that his paraphernalia was attached to a small balloon which cared for 90 pounds of the 160 pounds lift necessary for him to get into the air.

Questioned as to the balloon after he reached Paris (1812) the clockmaker insisted this had nothing to do with the efficiency of his machine in gaining and maintaining headway, but was only a counterpoise to lighten his efforts and aid in maintaining equilibrium in the air. But he never dared the air without it.

Degen gave three public exhibitions in Paris, as we have said, and was each time blown away by the wind. The disappointed spectators attacked Degen after the third fiasco and beat him unmercifully. Paris thereafter laughed at him as an impostor.

The old print of Degen's crash (above) and the Degen cartoon (left) in which the flying Viennese is caricatured by a lay figure hoisted upon a pole, are in the Harry Guggenheim Collection.

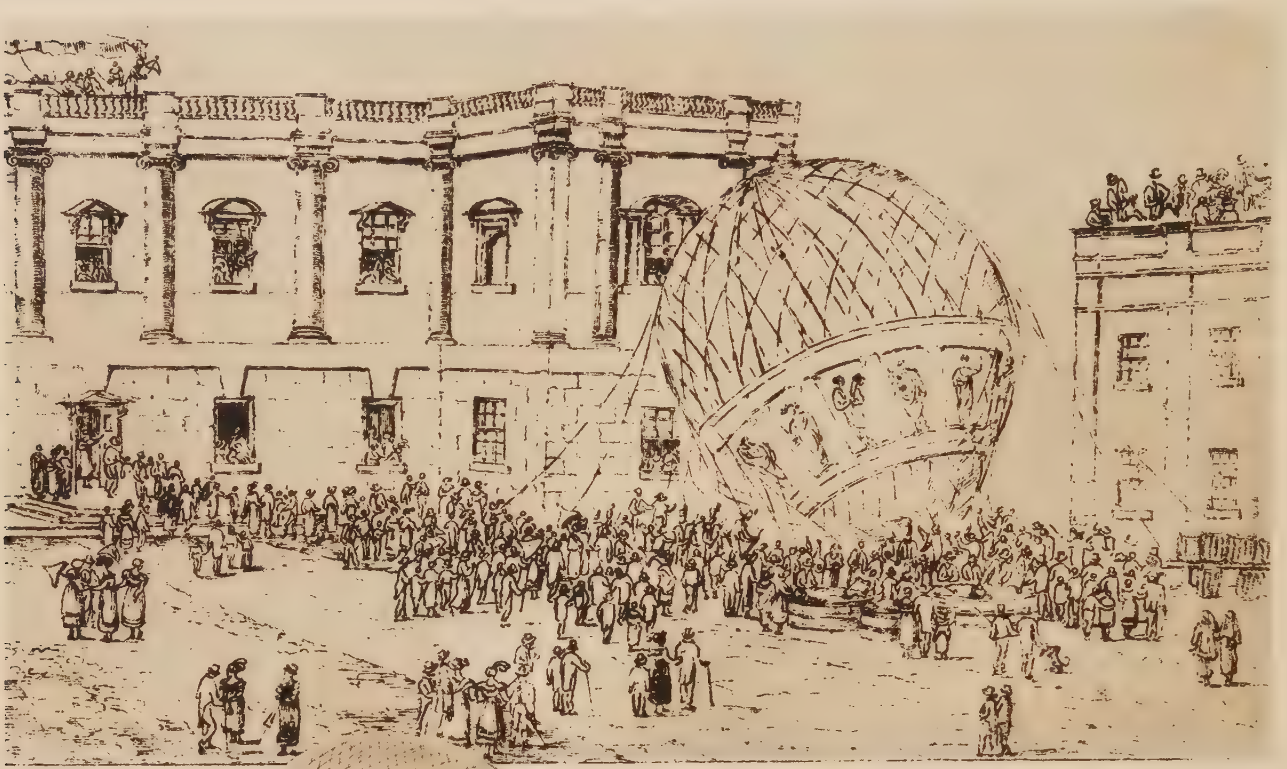
ENGLISH *at* OXFORD *and* DUBLIN *in Historic Ascents*—1810-12



THE IRISH SEA in the first twenty-five years of British ballooning, remained uncrossed by air. James Sadler, First English aeronaut, returned to aeronautics after a quarter century determined to cross it. He made ascensions at Oxford (1810), Birmingham and elsewhere (1811).

Sadler attempted the Irish sea crossing from Dublin to Holyhead (October 1, 1812).

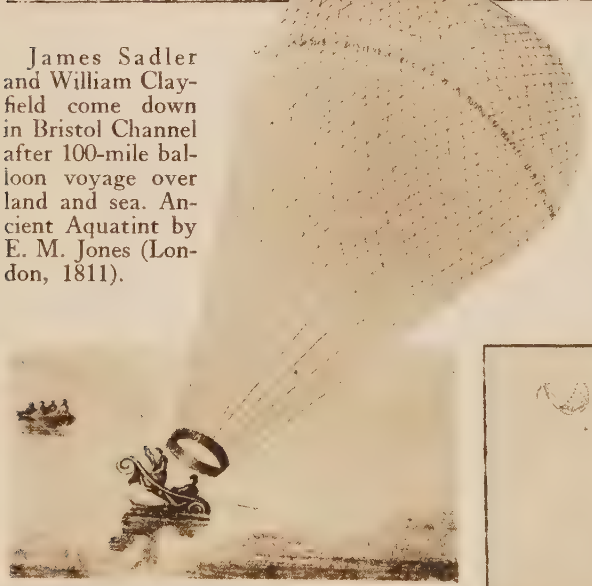
SADLER *Ascent in* HONOR *of* DUKE *of* WELLINGTON—1814



WILLIAM WINDHAM SADLER followed in his father's footsteps to become an aeronaut of note, and his elder brother John made several ascensions.

The younger brother ascended with his father as a mere boy and made his first solo ascent at 17. He and his father ascended together from Burlington House, London, in honor of the Duke of Wellington (May 27, 1814) to an estimated altitude of 5 miles, suffering severely with cold and pain.

Windham Sadler piloted the balloon from Burlington House (July 29, 1814), taking as his guest a young actress, Miss Thompson, who was "renowned in the dramatic corps." They descended safely after three-quarters of an hour—45 miles away. Etching in Collection of J. E. Hodgson.

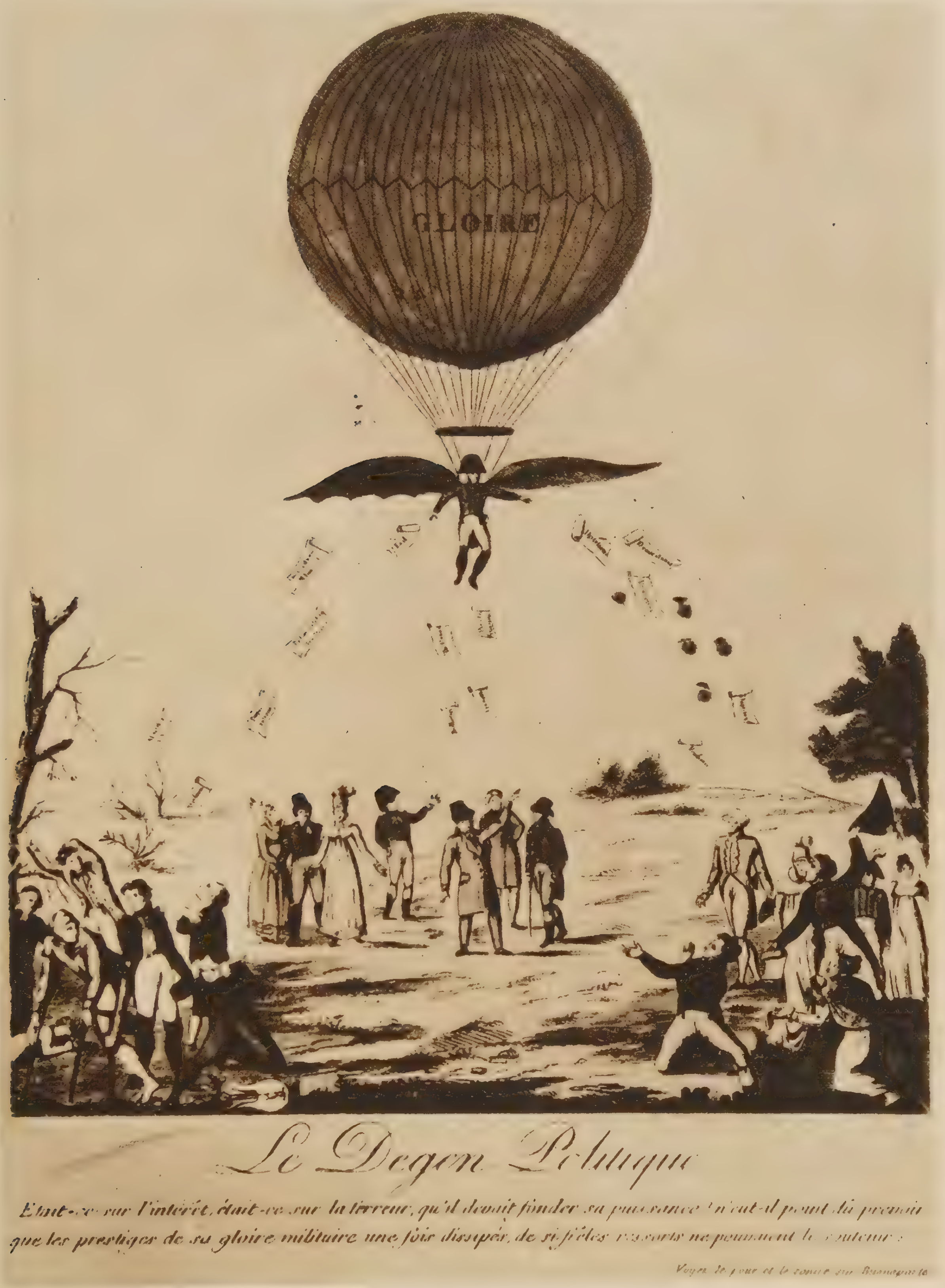


James Sadler and William Clayfield come down in Bristol Channel after 100-mile balloon voyage over land and sea. Ancient Aquatint by E. M. Jones (London, 1811).

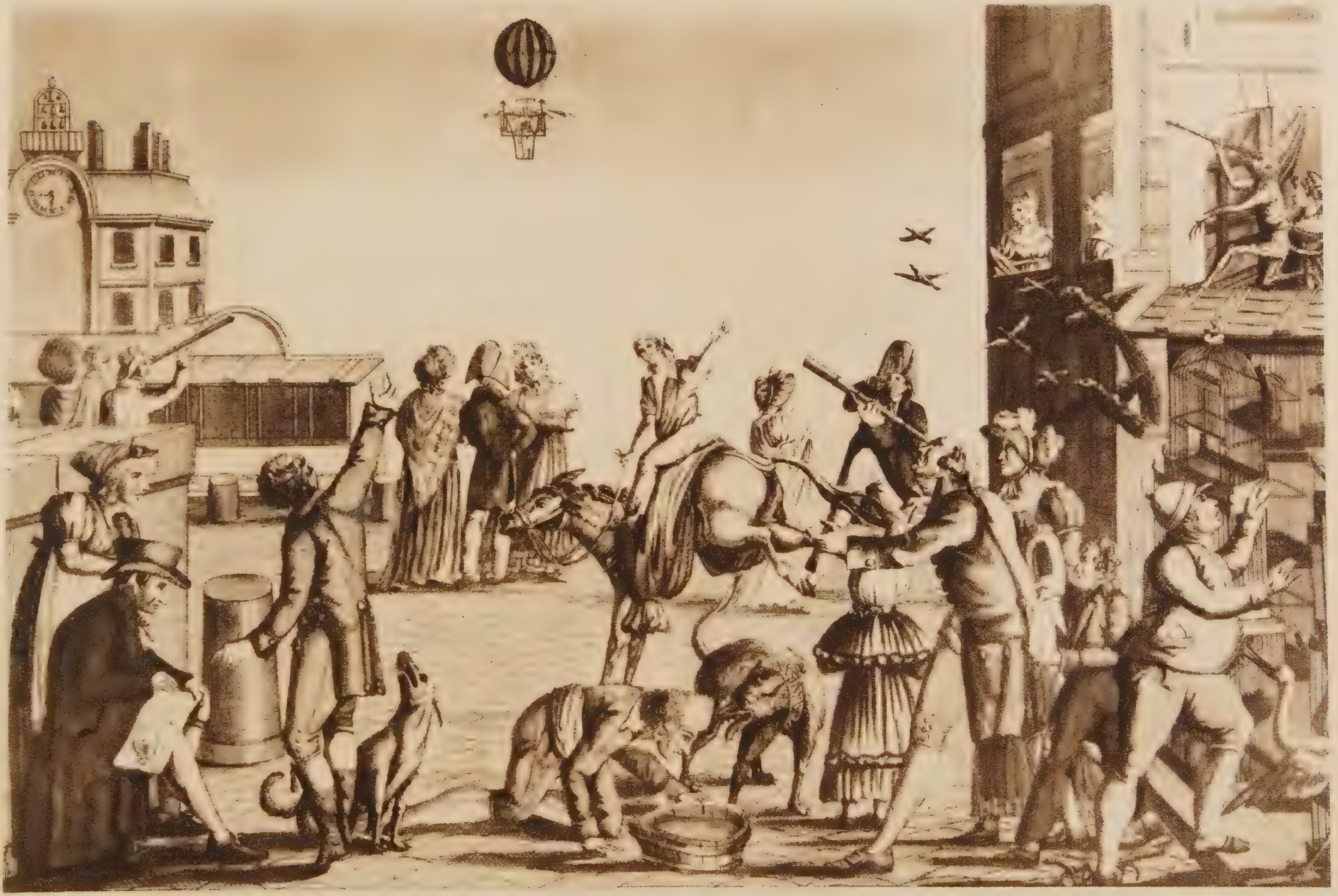
MADEMOISELLE ELIZABETH GARNERIN, niece of the World's First Parachutist (Andre-Jacques) gave parachute "drops" before admiring crowds. Her first descent (1815) is shown in the old print (right) in the Cuthbert Collection in London.

Madame Jeanne Genevieve Garnerin, wife of Andre-Jacques, who accompanied her husband on his English visit, became a professional aeronaute. She made parachute descents in different European cities.

NAPOLEON *Exiled at* ELBA *Cartooned as* "FLYING MAN"—1814

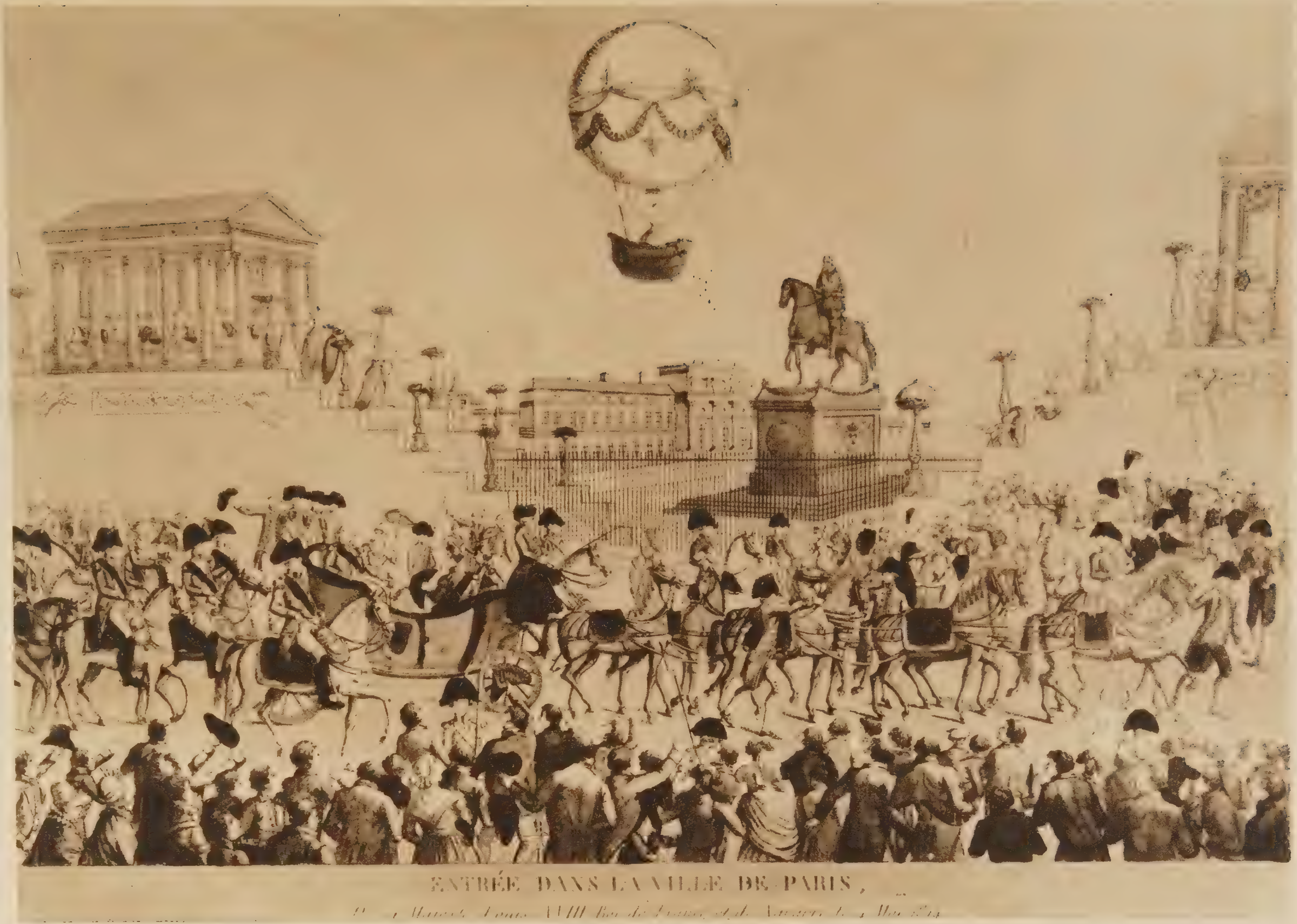

GLOIRE
Le Degon Politique
Etait-ce sur l'intérêt, était-ce sur la terreur, qu'il devait fonder sa puissance ? n'eut-il point dû prévoir
que les prestiges de sa gloire militaire une fois dissipés, de si frêles ressorts ne pourraient le soutenir ?

NAPOLEON Distributing Propaganda to the Crowds. Colored engraving in Bibliotheque Nationale in Paris.



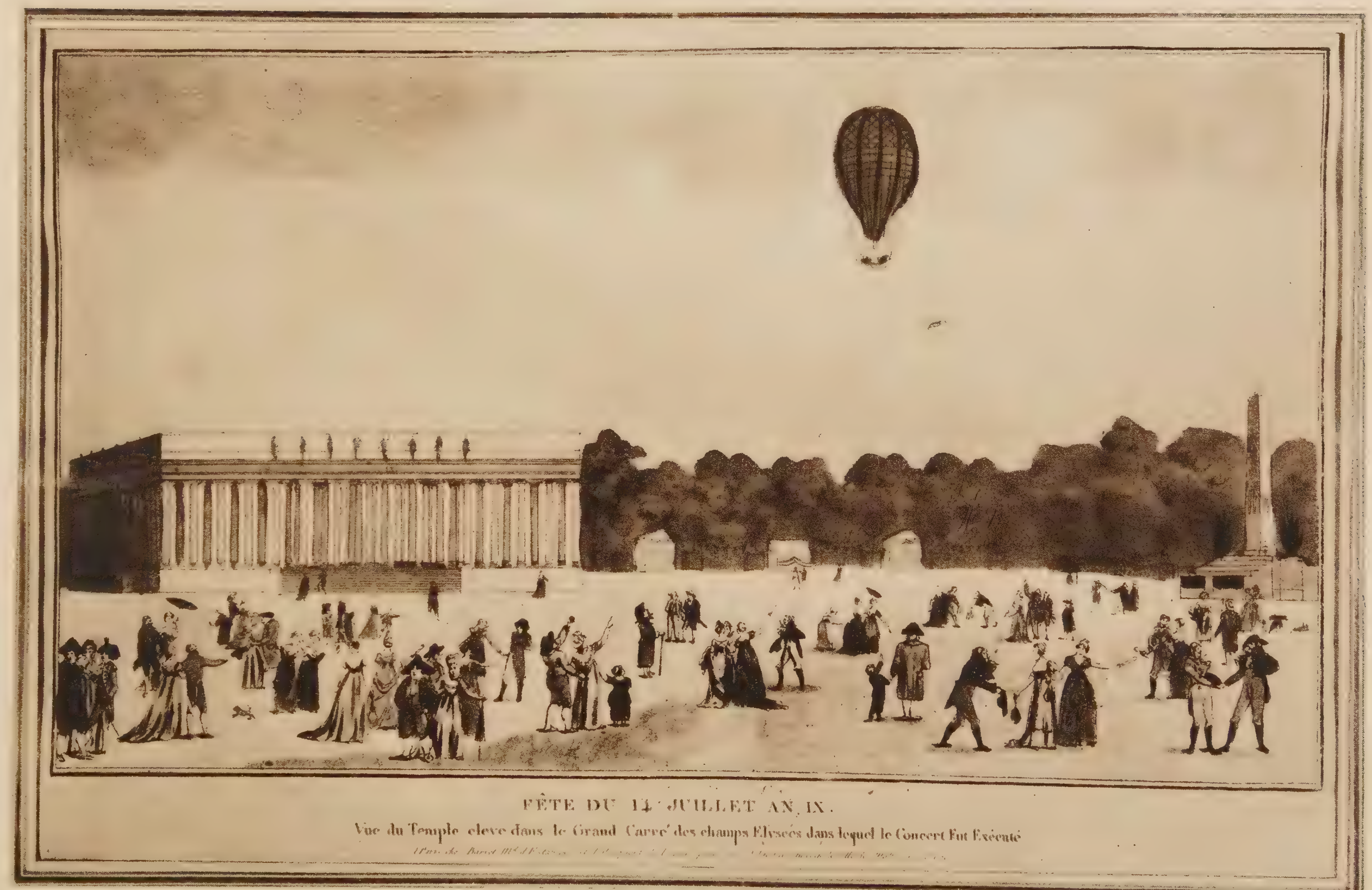
“HEAVIER-*than*-AIR” *Considered* WILDEST *of Fantasies*—1814

Contemporary Degen Cartoon Showing Tremendous Interest in France in Viennese Clockmaker's Invention—In the Harry Guggenheim Collection


ENTRÉE DANS LA VILLE DE PARIS,

NAPOLEON ABDICATES—*Louis* XVIII *Restored to Throne*—1814

Old Engraving of Madame Blanchard "Official Aeronaute of the Restoration," in Balloon Flight Over Royal Procession of Louis XVIII


FÊTE DU 14 JUILLET AN IX.
Vue du Temple eleve dans le Grand Carre' des champs Elysées dans lequel le Concert Fut Exécuté

BASTILE DAY *in* PARIS—*Celebrating Fall of* NAPOLEON—1814

Colored Print of the Celebration of the Great French National Holiday—In the Harry Guggenheim Collection.

EXILED to St. Helena by the English, with the irony of only rats and mice to mobilize and train, we now find the Great Napoleon.

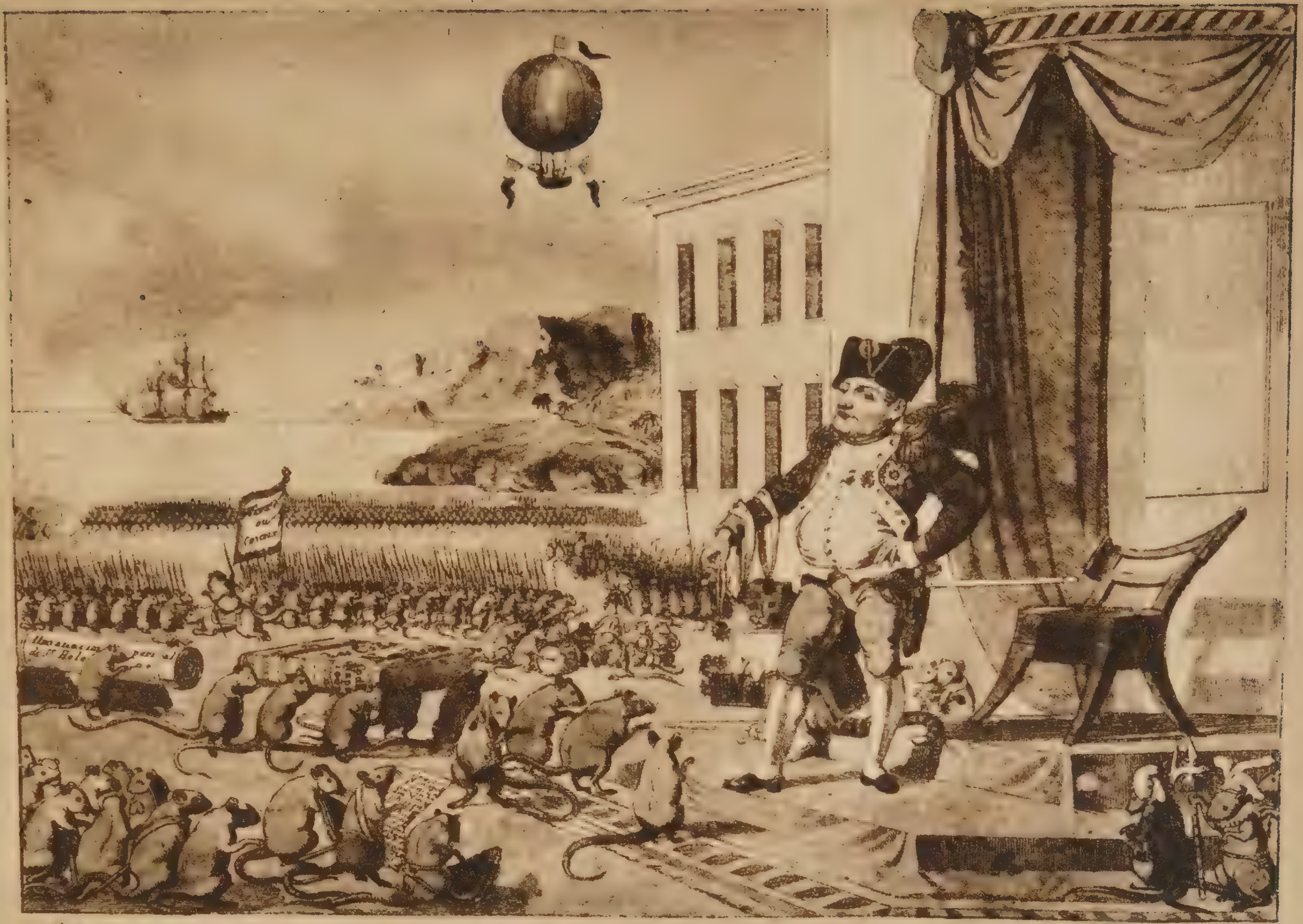
He realized that *one* balloon could restore him to the mainland. A plan to thus escape was frustrated.

Napoleon's day was done. He never left his island retreat. The French people no longer acclaimed him.

Louis XVIII came to the throne. Napoleon, throwing himself upon the mercy of the British, met with no hospitality on English soil — St. Helena was the verdict.

Josephine was dead and Marie Louise had cast the little Corsican aside. The hectic years of the great Bonaparte's success had left all Europe in a ferment, out of which new leaders must find the way.

The magic of Napoleon's name and the magnetism of his personality were gone—he had strutted the stage of the world for the last time.



Wie der – dies Jahr in **Europa** *nicht mehr gefeyerte –* **Napoleons=Tag** *auf der Insel St: Helena festlich begangen wird.*

Famous Cartoon of NAPOLEON *in Exile at* ST. HELENA—1815

Engraved German Print in the Bella C. Landauer Collection of Aeronauticana.

“FATHER *of English* AERONAUTICS” *Defends Navigation*— 1814

Yrs truly

Geo Cayley

SIR GEORGE CAYLEY, Bart. (1773-1857), “Father of British Aeronautics,” who made the world’s first experiments with gliders, first suggested the formation of an Aeronautical Society. He was a commanding figure in aerial progress for more than a half century. He was but a boy of 9 years when the Montgolfiers invented the balloon. The “noble art of aerial navigation” intrigued his young mind, and remained a leading interest with him until he died at 84 years. Cayley was 23 when he first experimented with an aerial top; at 30 he designed a hot-air engine; for 25 years navigable balloons were chiefly in his mind, and then (1843) he turned to the flying machine and designed an “Aerial Carriage.” Sixth holder of a title (founded in 1661), born to the purple, Cayley gave his life to science and engineering, especially to aeronautics. Engraving by I. J. Penstone.

PART XIII

AGE *of* INVENTION *and* RACE *for* SUPREMACY

"*The* NATION *that* CONQUERS *the* AIR *will* RULE *the* WORLD"

GREAT Events are casting their shadows before them. The first steamship crosses the Atlantic—from Savannah to Liverpool (1819)—and exactly one hundred years later, on the Centennial of this event, the first airships are to cross the Atlantic. The railroads are coming—and then the telegraph. Transportation and communication are to give a new impetus to human progress.

The period which we are to survey—from the fall of Napoleon in France to the coming of Andrew Jackson in America—is an age of prophetic vision which challenges the genius of man (1815-1830).

New forces are to be placed behind civilization to aid man in the gigantic task of developing the earth's resources. He is entering upon a century of world expansion, the building of new economic empires. There is a tremendous job ahead of him, which he is just beginning to organize.

Fifty years now have passed since the historic days of the Montgolfiers. The first aeronauts have passed away—many of them killed—and a new generation has taken their place. Cayley has come to the front, and Charles Green and John Sheldon. The English take the ascendancy for a time while France rests on its laurels. Italy and Germany remain in the background. The new America is still far in the rear in the race of the nations.

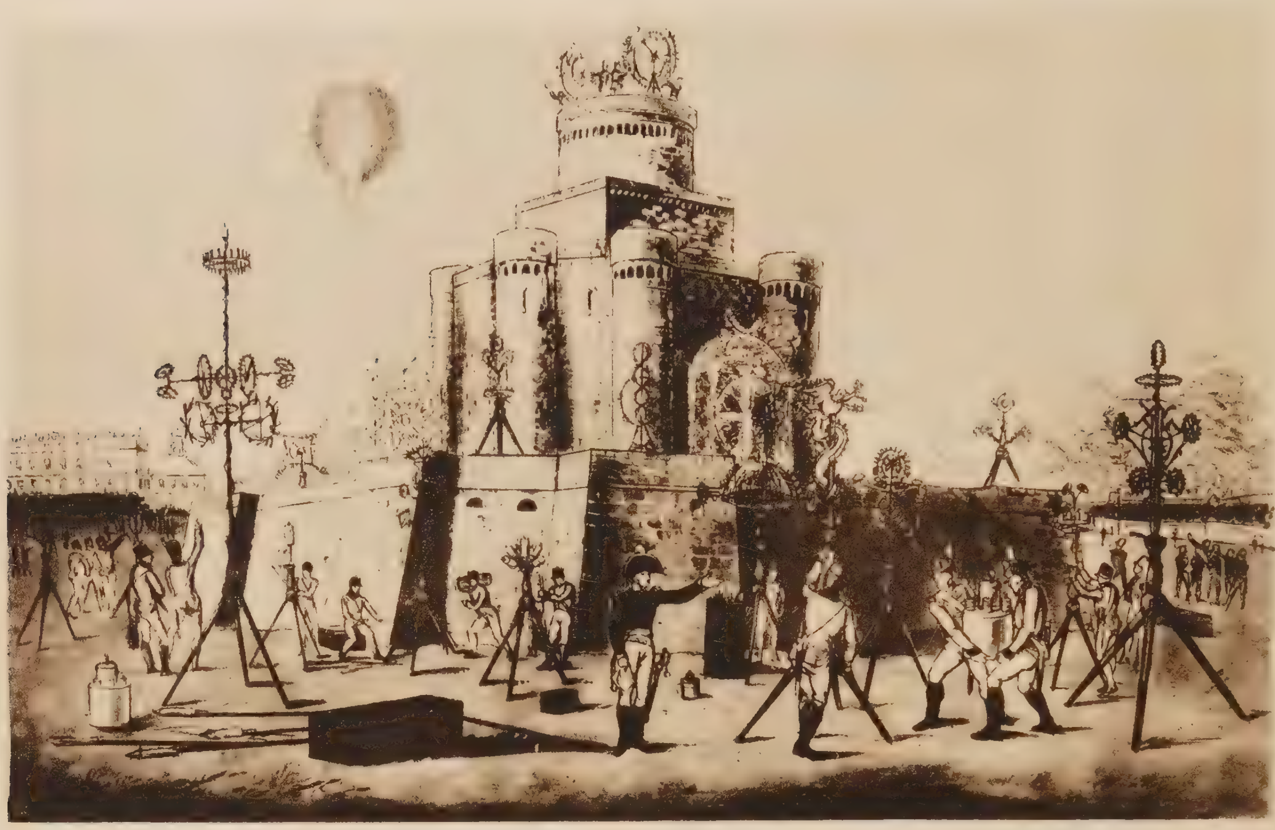
The Bourbons have been restored in France—Louis XVIII, Charles X, Louis Philippe follow in rapid succession. George III dies in England and is succeeded by George IV and then William IV—with Victoria, a young girl, as heir-apparent. John Adams dies in America, at the age of 90 years, and Thomas Jefferson at the age of 86—both on the same day (July 4, 1826), the birthday of the nation. James Monroe has appeared with his Monroe Doctrine; John Quincy Adams is in the Presidency—and now Andrew Jackson.

Byron, Keats and Shelley are the young poets in England; Thomas Carlyle is a young man; Charles Darwin and Robert Browning are boys. Balzac, Chateaubriand, Dumas, Victor Hugo are active in France. Corot, Millet, Rosa Bonheur are children. Goethe, Hegel, Heine, Humboldt, Schopenhauer are to the front in Germany; Schiller has come and gone. Beethoven, Mendelssohn, Schumann are the masters; Verdi and Wagner have just been born.

This is a formative period—foundations are being laid in social, political and economic progress. Florida is acquired from Spain (1819); Mexico wins her independence from Spain (1821); Greece is fighting her war for independence (1812); Revolution breaks out in Portugal with the separation of Brazil (1822); the Monroe Doctrine is declared (1823); Trade Unions are allowed in England (1825); the Erie Canal is opened in America (1825); War breaks between Russia and Turkey (1828) and Revolution in France (1830).

Throughout this period, we find the Science of Aeronautics extending its aerial explorations. One hundred years more, and we shall find man expanding his activities until we see him exploring the fringe of the universe in which he lives—and even then he is just beginning.

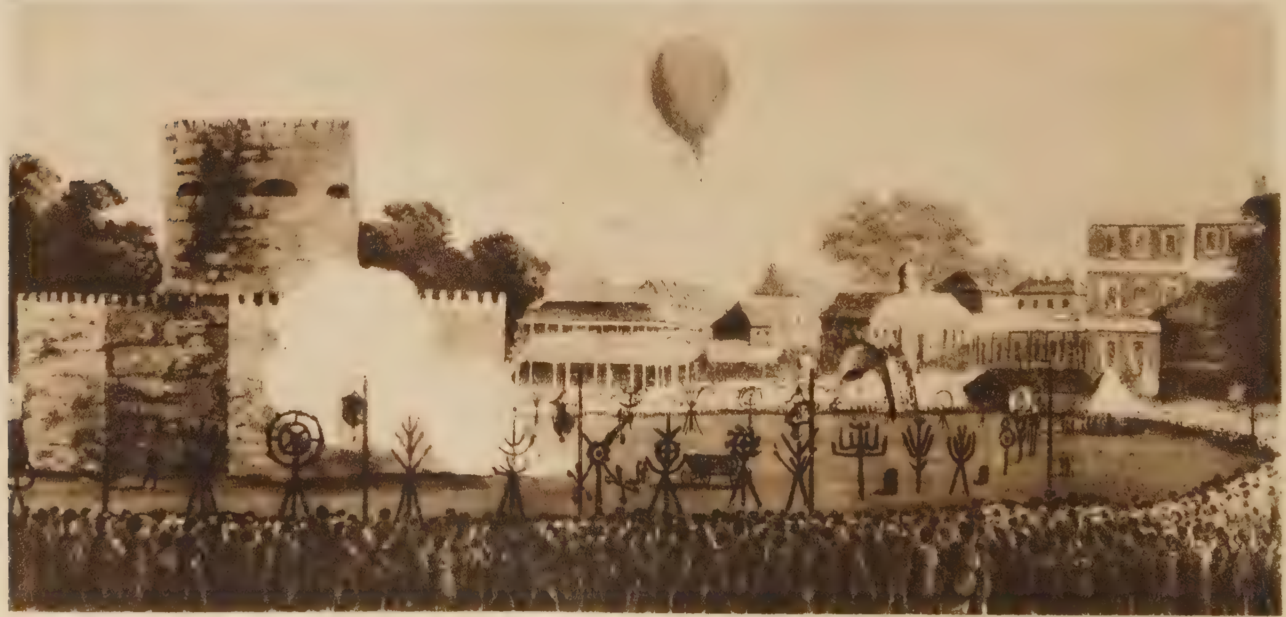
Anniversary ASCENT *of* NELSON'S VICTORY *on* NILE—1814



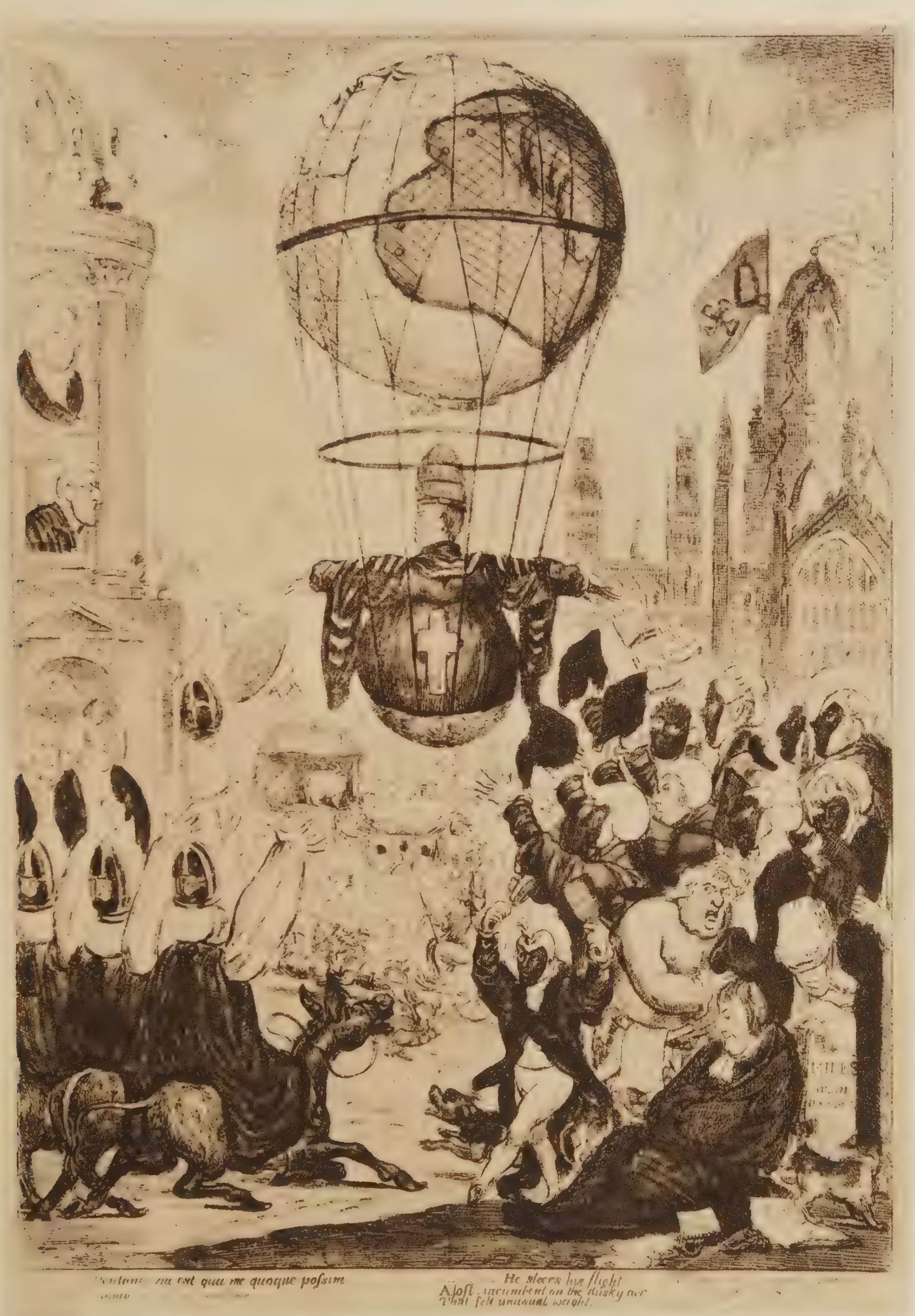
JOHN SADLER, elder son of the First Aeronaut, made one notable balloon ascent (August 1, 1814). It was a feature of the "Grand Jubilee" which jointly celebrated (rather prematurely) peace with the French, a century of the Brunswick family on the throne of England, and the anniversary of Nelson's victory of the Nile

All London was agog. St. James Park was the scene of the principal festivities. Here Sadler made his ascent. Mrs. H. Johnstone was to ascend with him, but the balloon netting was found to be broken and the Duke of Wellington advised against it.

Sadler, however, went up alone and landed safely but precipitously some twenty miles away after forty minutes in the air. The balloon valve was entangled in the netting and he was obliged to stab the envelope with his pocket knife. Contemporaneous prints from the Harry Guggenheim Collection.

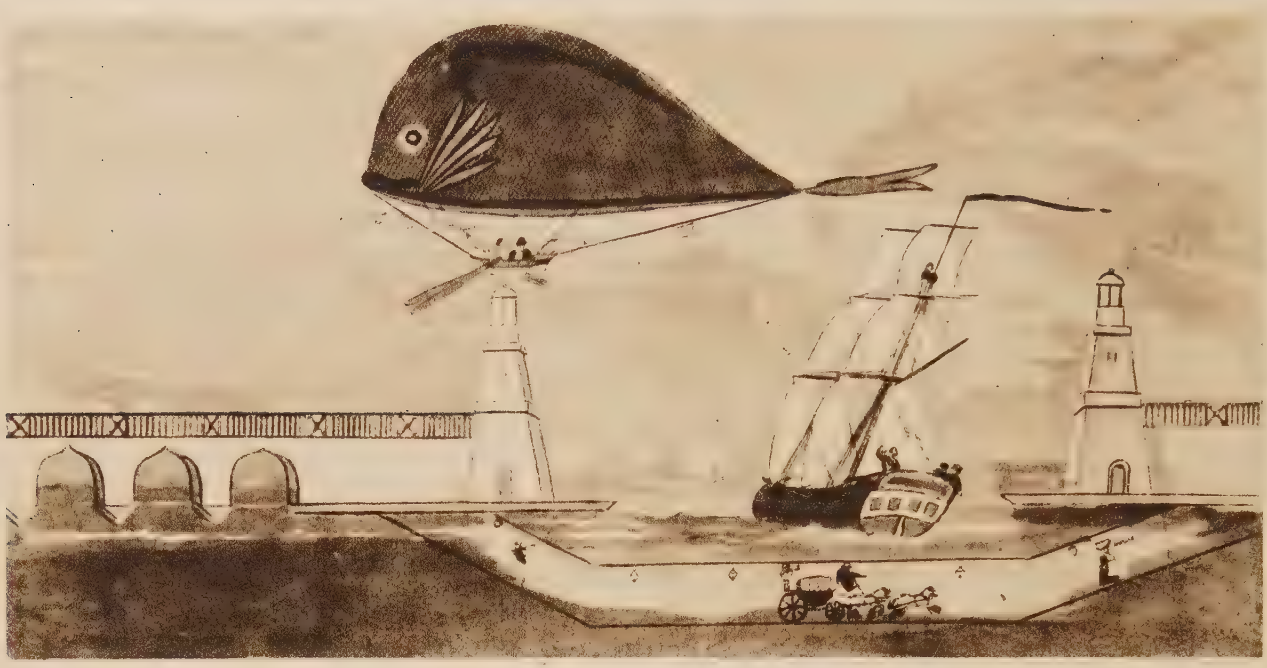


RELIGIONS *Do Not Escape* IRONY *of the* SATIRISTS—1814

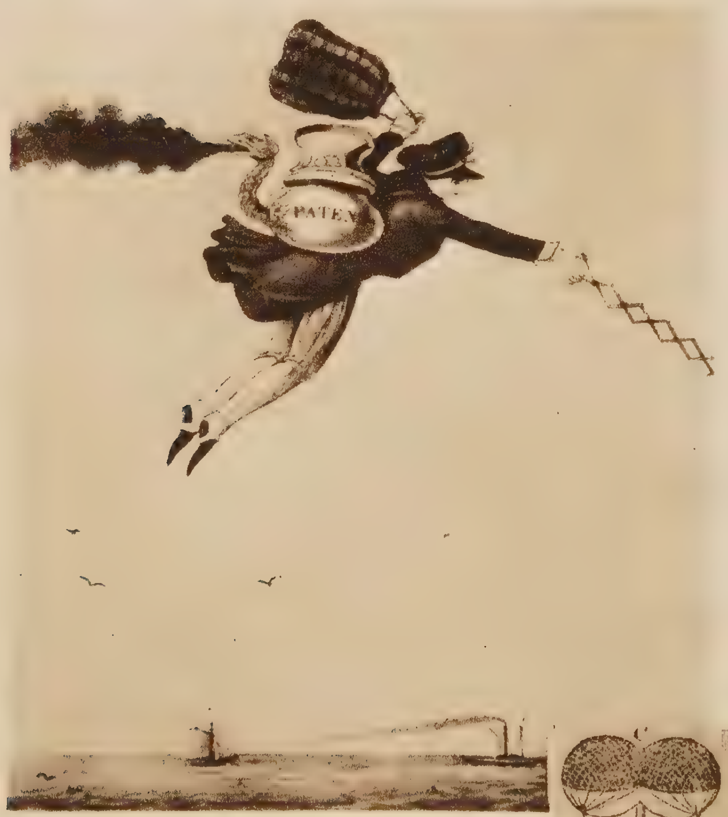

Tentanda via est qua me quoque poſsim
He steers his flight
Aloft, incumbent on the dusky air
That felt unusual weight.

THE "OXFORD MOVEMENT" in the Church of England was in its early beginnings (1814) when this caricature (above) was published. Centering about Oriel College, Oxford University, was a high church movement which resulted, years afterward, in Cardinal Newman going over to the Roman Catholic Church. Wars and State affairs were forgotten in the excited division of religious controversy which involved England.

CARTOONS *as* FIRST STEAMSHIP *Crosses* ATLANTIC—1819



ENGLAND'S FIRST DIRIGIBLE—THE PAULLY AND EGG DOLPHIN BALLOON
Old Cartoon in the Cuthbert Collection in London.



"MR. GOLIGHTLY"—Facetious caricature (above) of Flying Man whose Steam Boiler flew him "from Paris to St. Petersburg in an hour"—In the Harry Guggenheim Collection.

THE CURIOUS FISH-SHAPED BALLOON (top of the page) is England's First Dirigible (1816–17). It was built by Samuel John Paully, a Swiss engineer who had come to London, and a compatriot, Durs Egg, gunmaker to George III, with a shop in Pall Mall, whom Paully interested in his ideas.

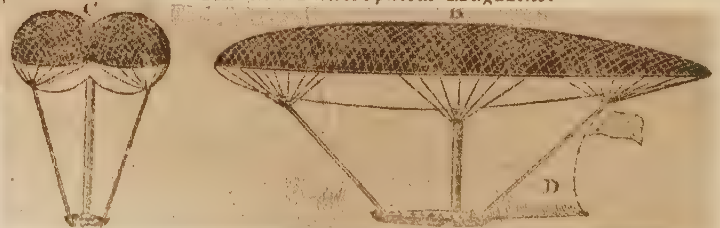
Paully adapted somewhat the ideas of Baron Scott published in the latter's book (1789). He first built a dirigible in France and experimented with it with indifferent success.

His "Dolphin" was built in the special 100-foot shed which was the First Dirigible Hangar (1816). It was 85 or 90 feet long, 32 feet in extreme height and 24 feet broad.

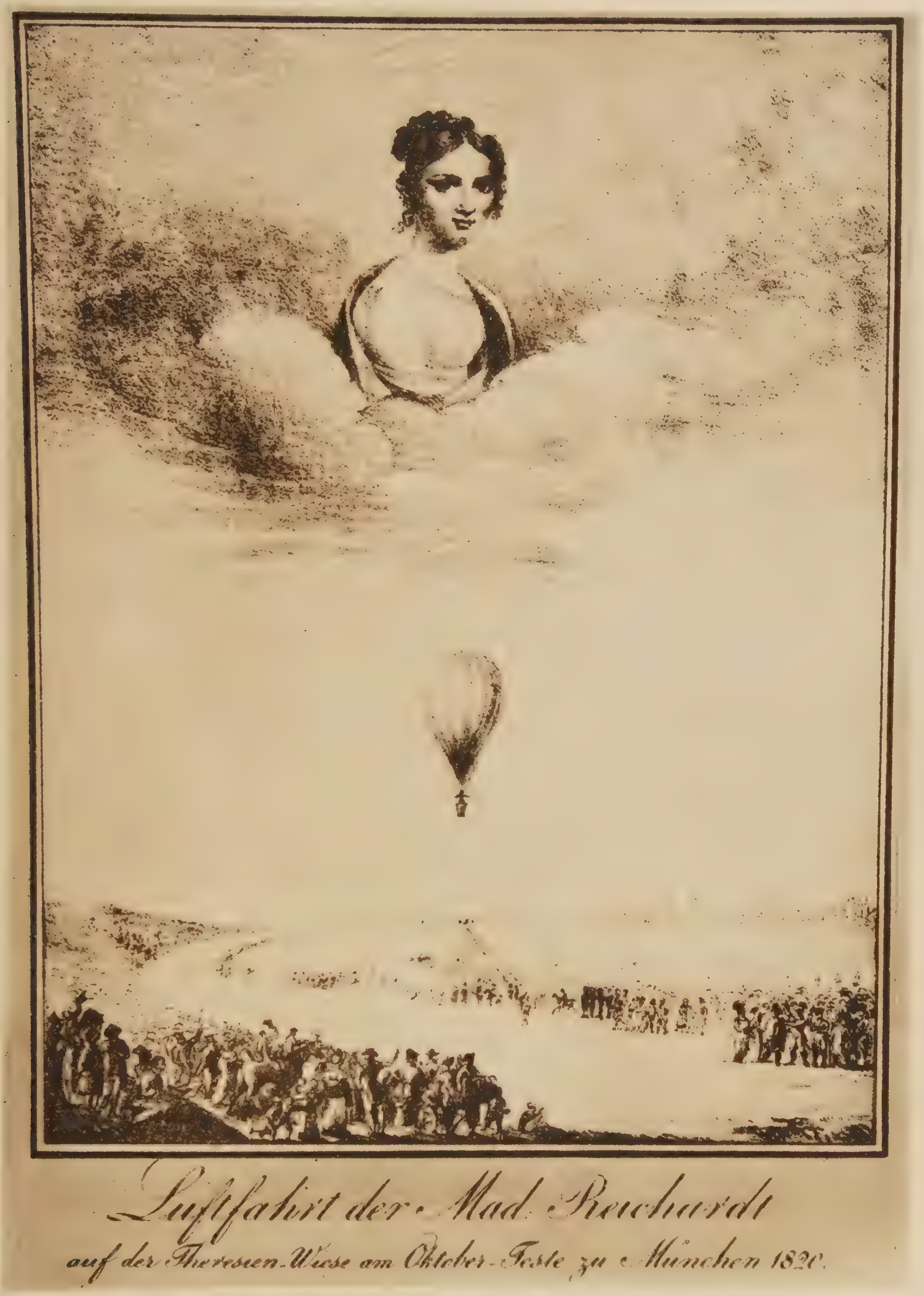
The fish-formed outer balloon, to be inflated with hydrogen gas, was of goldbeater's skin—from "70,000 oxen"—and moulded over a wood frame. A punt-shaped gondola was suspended beneath and supplied with oars. There was a box of sand running on a fore-and-aft cable to "trim ship."

Paully died (1817) before the dirigible was completed and Egg abandoned the project with a loss of $50,000, its entire cost.

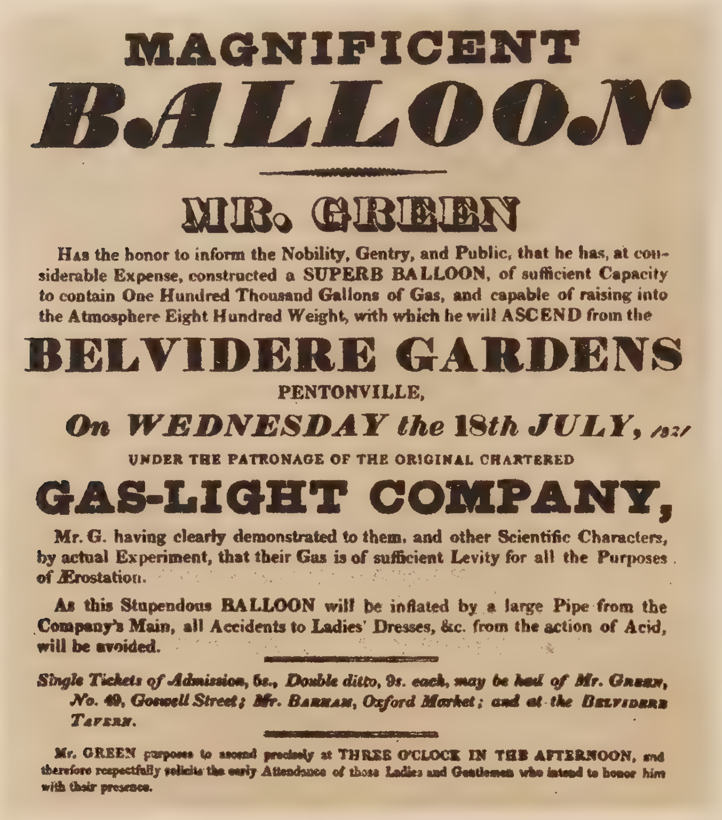
Sir George Cayley's first design (below) for a navigable balloon (1816–17) on the Montgolfier hot air principle was 300 feet long. From Tilloch's *Philosophical Magazine.*



WOMAN AERONAUT *Arouses Enthusiasm in* EUROPE—1820


Luftfahrt der Mad. Reichardt
auf der Theresien-Wiese am Oktober-Feste zu München 1820.

BALLOON ASCENSION OF MADAME WILHELMINA REICHARDT,
During the Munich Festival. Her first ascent was from Berlin; she made forty-five ascents.



MAGNIFICENT

BALLOON

MR. GREEN

Has the honor to inform the Nobility, Gentry, and Public, that he has, at considerable Expense, constructed a SUPERB BALLOON, of sufficient Capacity to contain One Hundred Thousand Gallons of Gas, and capable of raising into the Atmosphere Eight Hundred Weight, with which he will ASCEND from the

BELVIDERE GARDENS

PENTONVILLE,

On WEDNESDAY the 18th JULY, 1821

UNDER THE PATRONAGE OF THE ORIGINAL CHARTERED

GAS-LIGHT COMPANY,

Mr. G. having clearly demonstrated to them, and other Scientific Characters, by actual Experiment, that their Gas is of sufficient Levity for all the Purposes of Ærostation.

As this Stupendous BALLOON will be inflated by a large Pipe from the Company's Main, all Accidents to Ladies' Dresses, &c. from the action of Acid, will be avoided.

Single Tickets of Admission, 6s., Double ditto, 9s. each, may be had of Mr. Green, No. 49, Goswell Street; Mr. Barham, Oxford Market; and at the Belvidere Tavern.

Mr. GREEN purposes to ascend precisely at THREE O'CLOCK IN THE AFTERNOON, and therefore respectfully solicits the early Attendance of those Ladies and Gentlemen who intend to honor him with their presence.

CHARLES GREEN (1785–1870) was the best known of English aeronauts through the first half of the Nineteenth Century. He is largely responsible for the use of coal gas for the inflation of balloons. He made the first ascent by its use (July 19, 1821) and thus gave new impetus to English ballooning.

Coal gas is carburetted hydrogen; it could be more easily procured of standardized quality than the hydrogen gas which had been obtained from iron filings and sulphuric acid, and it was much less expensive.

The London Gas Light and Coke Company had been incorporated (1812) and other English cities were introducing this new means of illumination.

Green's first balloon ascension, using coal gas, was scheduled to take place from the Belvidere Gardens, Pentonville, London, on Wednesday, (July 18, 1821)—as announced in the handbill reproduced above (original in British Museum). But for a reason now unknown he did not ascend on this date.

On the next day, however, (July 19, 1821) he was engaged by the British Government to make an ascension from the Green Park in connection with the festivities celebrating the coronation of George IV. His balloon—bearing the Royal Arms and with the inscription, "George IV, Royal Coronation Balloon"—was inflated from the Piccadilly gas main.

It went up over two miles and after forty minutes descended—so rapidly that he was spilled into a field and dragged along the ground for 1,500 feet.

Green had varied bad luck in other early ascents and once or twice was seriously injured by landing in trees. But he persevered and in the course of years became the most skillful pilot of his day. We shall meet him repeatedly in coming pages in noteworthy aeria accomplishments.

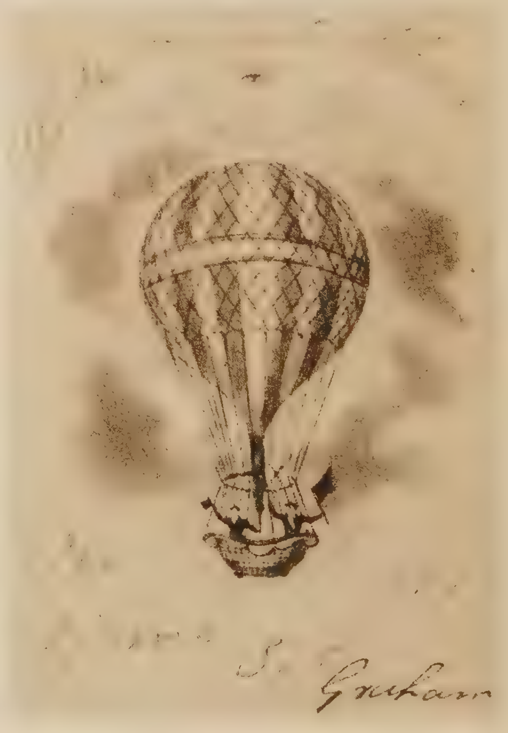
GEORGE GRAHAM, professional aeronaut, and his wife Margaret—who later claims to be "Her Majesty's Aeronaute" and the "only English Female Aeronaute"—come into English ballooning at this time (1823).

Graham built a great balloon of 250,000 cubic feet capacity, nearly twice the size of any before constructed. He inflated it with coal gas and attempted an ascent at the White Conduit House Tavern, Pentonville, London (August 18, 1823). The inflation was a failure and he did not actually make an ascent till he went up (September 5, 1823) from Berwick Street, Soho (London) with Thomas Harris, who was later killed in a balloon ascent of his own.

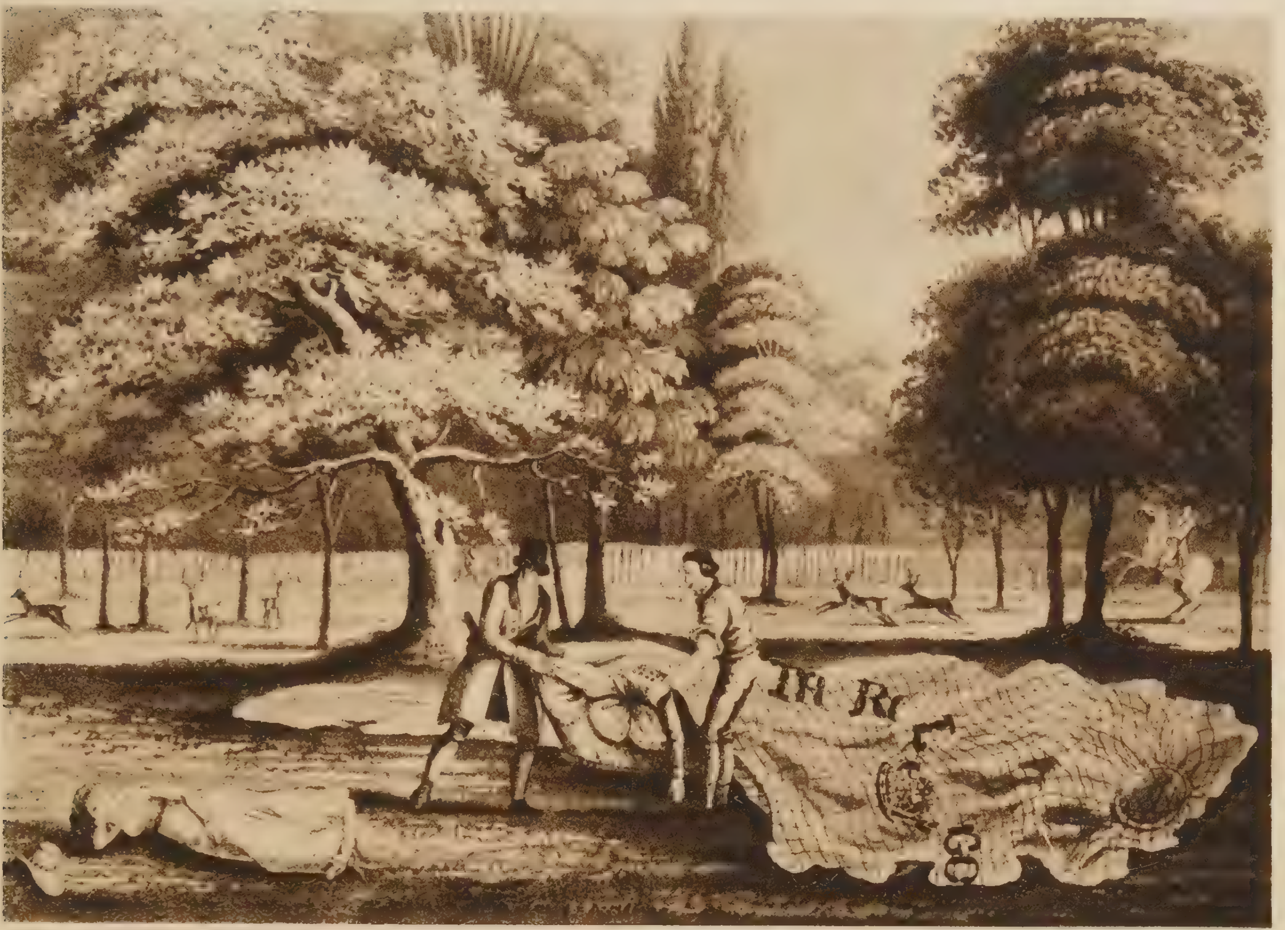
On his sixth ascent (June 2, 1824) Graham took with him in the balloon his wife, Margaret, then a bride of twenty. The following year (May 2, 1825) the two ascended with two passengers. In an ascent at Plymouth, England (November, 1825) Mr. and Mrs. Graham fell into the sea and lost their balloon, being rescued when completely exhausted and drowning.

Graham learned eleven years after that their balloon, which broke loose as they were picked up, was seen and identified off Gibraltar.

Mrs. Graham became the more active in aeronautics in later years and followed the air for a long time. We shall meet her again in these pages. Ticket (below) is signed by Graham and admits to his first ascension after payment of the 3 shillings, 6 pence noted upon its face.



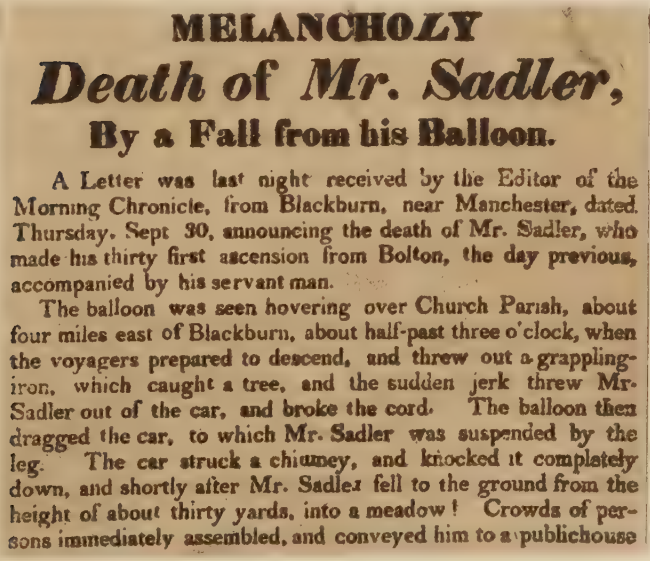
TRAGIC FATALITIES *Shock the* ENGLISH PEOPLE—1824



TWO TRAGEDIES in a single year (1824) caused a horror-stricken England to pause. An aeronaut named Thomas Harris was believed by many to have deliberately jumped from a falling balloon to save his companion, a youthful Miss Stocks. Harris was instantly killed and Miss Stocks terribly injured.

Harris had made a successful ascension with George Graham (September 5, 1823), and had invented a new type of valve for his huge balloon, "The Royal George," which permitted the aeronaut to "discharge the whole of his gas in an instant."

This was a double valve at the top, with two cords, and George Graham insisted Harris had pulled the wrong cord. Old aquatint (above) in J. E. Hodgson Collection, after a drawing made on the spot by T. T. Dales.



MELANCHOLY

Death of Mr. Sadler,

By a Fall from his Balloon.

A Letter was last night received by the Editor of the Morning Chronicle, from Blackburn, near Manchester, dated Thursday. Sept 30, announcing the death of Mr. Sadler, who made his thirty first ascension from Bolton, the day previous, accompanied by his servant man.

The balloon was seen hovering over Church Parish, about four miles east of Blackburn, about half-past three o'clock, when the voyagers prepared to descend, and threw out a grappling-iron, which caught a tree, and the sudden jerk threw Mr. Sadler out of the car, and broke the cord. The balloon then dragged the car, to which Mr. Sadler was suspended by the leg. The car struck a chimney, and knocked it completely down, and shortly after Mr. Sadler fell to the ground from the height of about thirty yards, into a meadow! Crowds of persons immediately assembled, and conveyed him to a publichouse

The other balloon fatality (1824) was the "melancholy death" by a fall from a balloon near Blackburn, England, of William Windham Sadler, younger son of James Sadler, the first English aeronaut.

Windham Sadler was but 28, yet had been a successful aeronaut since his first "solo" ascent at 17 (Page 244). He had been first to cross the Irish Sea by air, from Dublin to Hollyhead (July 22, 1817) when but 21 years of age.

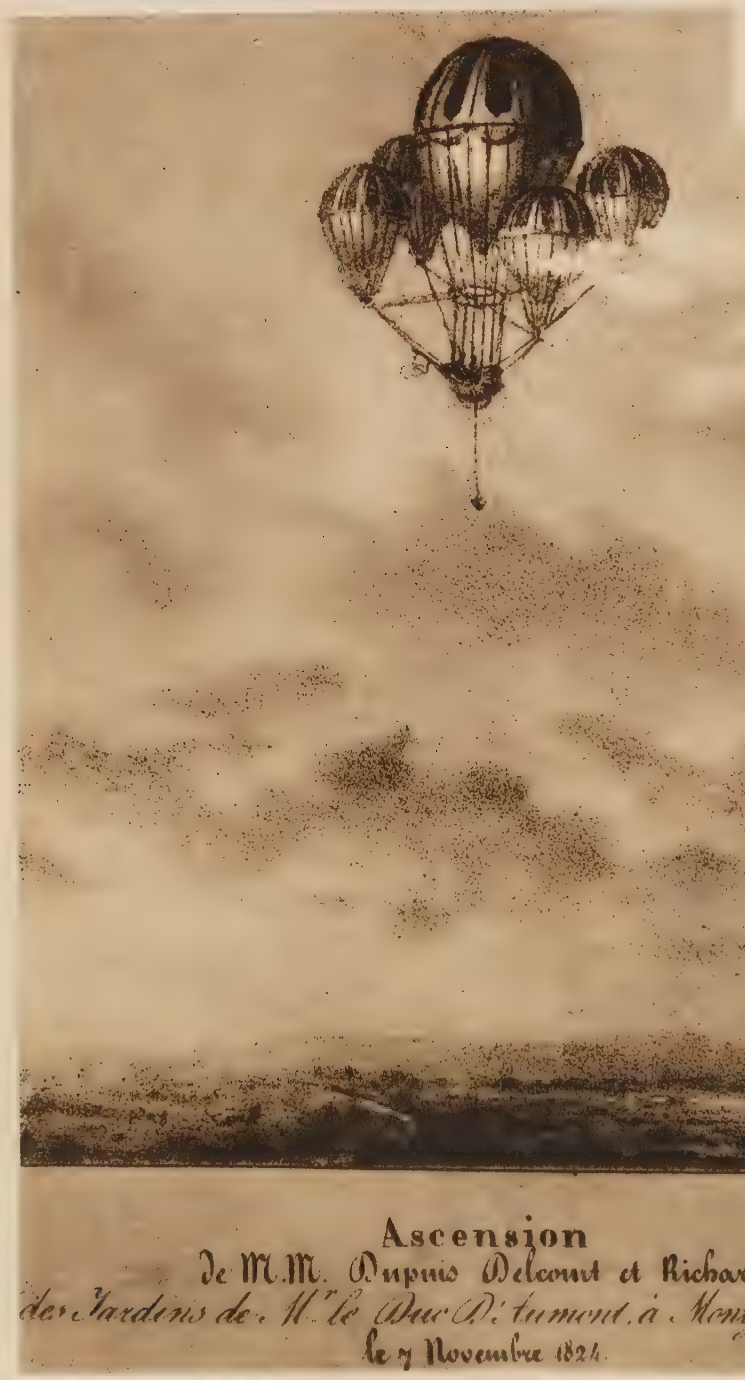
Windham Sadler's thirty-first aerial voyage was his last (September 29, 1824). He ascended from Bolton, in the west of England, with his servant, James Donnelly, in very unfavorable weather—high wind, rain and a thick atmosphere. After about 15 minutes in the air Sadler decided to descend and the balloon came down very fast. His grappling iron broke and the balloon was driven against the chimney of a house, throwing Sadler out.

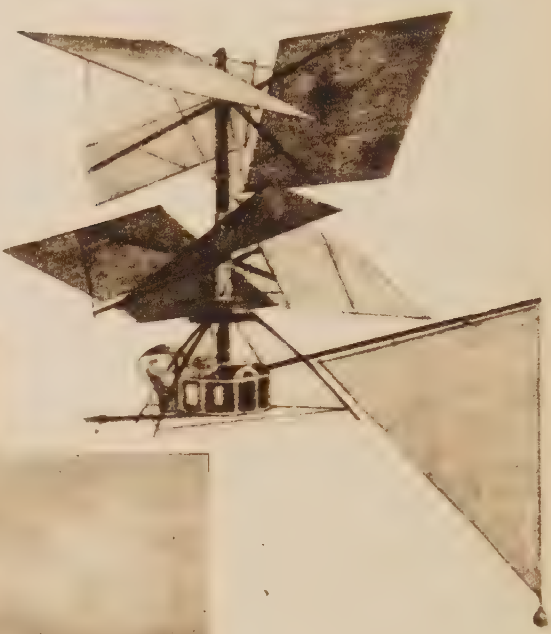
He remained suspended by his legs in mid-air a few moments and then fell to the ground, fatally injured. With its helpless occupant, the lightened balloon reascended and Donnelly was finally able to land, badly injured, some three miles away.

FRENCH *Scientist Produces* "FLOTILLE AERIENNE"—1824

JEAN-BAPTISTE DUPUIS-DELCOURT (1802–1864), French scientist and aeronaut, was a leading aerial investigator for half a century and wrote extensively on his experiences. He met Joseph Montgolfier as a young boy and knew Dr. Charles and Potain, Garnerin, Deegan, Lennox and others active in aerostation.

The dirigible balloon was his special aim and he gained much useful information about air currents with his "Flotille Aerienne" (below). Original in the Guggenheim Collection.


Lith. de Villain
Ascension
de M.M. Dupuis Delcourt et Richard.
des Jardins de Mr le Duc D'Aumont, à Montjean près Paris.
le 7 Novembre 1824.



Again we come to the man-power flying machine by whose flapping wings men worked for 2,000 years to simulate bird flight by artificial means and thus achieve human flight.

Vittorio Sarti of Bologna, Italy (1825), is the inventor. Strictly, Sarti's machine was a helicopter, for he depended mainly on the lift of what amounted to a double air screw formed of the vanes of his dual horizontal windmill, though these vanes were hinged and could flap, after a fashion.

Like his predecessor, Degen (1812) and others of his many successors, until the light gasoline motor came into existence, these helicopter designers had no adequate power plant. Coulumb, French scientist, assured the French Academy (1781), apropos of Blanchard's flying machine, that flapping wings two or three thousand feet long moved three feet per second would be required to raise a man. Old print in New York Public Library.

Parachute EXPLOITS *of* GARNERIN'S *Niece and* WIFE -1824

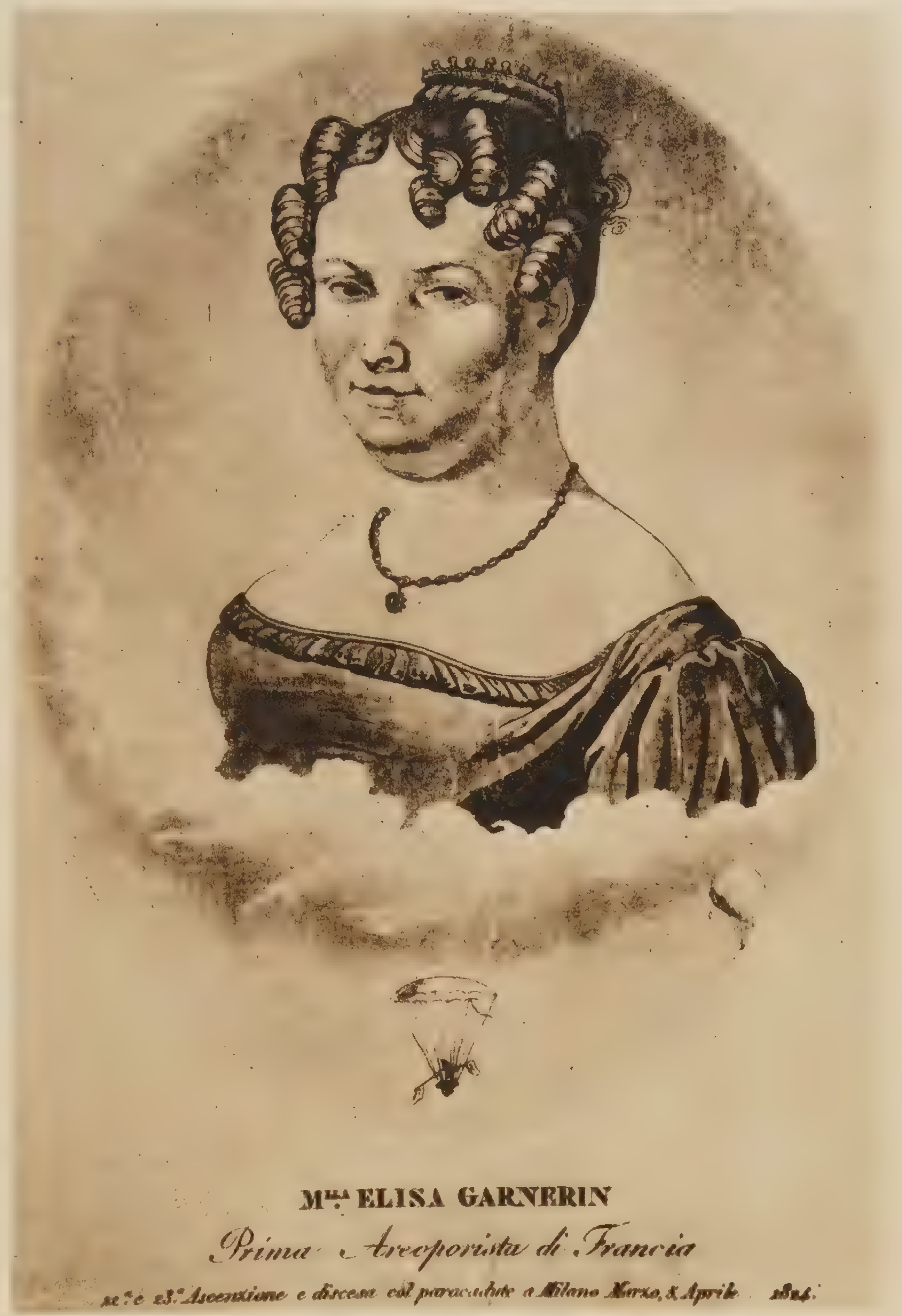
ELISABETH GARNERIN and Jeanne-Genevieve, her uncle's wife, carried on the great Garnerin name in the air. More even than Madame Blanchard, who caught the attention of Napoleon and of Louis XVIII, these Garnerin ladies were responsible for making the balloon and the parachute known to the women of Europe.

Madame Garnerin was the first woman in the world to "solo" in a balloon ascent and the first woman to make a parachute drop from a balloon. She made many ascensions in different European cities, usually with a parachute thrill accompaniment (1799–1812).

Soon Garnerin's niece, Mademoiselle Elisabeth (right), came into the picture as female balloonist and parachutist (1815). Mademoiselle Elisa made her first parachute descent at twenty-four and in the next twenty-one years gave thirty-nine exhibitions.

Madame Jeanne-Genevieve Garnerin (1779–1847) was but eighteen when her husband, the famous Andre-Jacques, made the first descent from a balloon in the first parachute ever made by man, at Paris (October 22, 1797). He was a bachelor then. Garnerin had but lately returned from a two years' imprisonment in a Hungarian war prison at Buda-Pesth, when the lure of aerostation of his college days returned to him.

Back once more in Paris (1797), he sought out Dr. J. A. C. Charles, who had been first to ascend in a hydrogen balloon (1783) and, though making no more balloon ascents, was prominent and active in aeronautics in France for years.

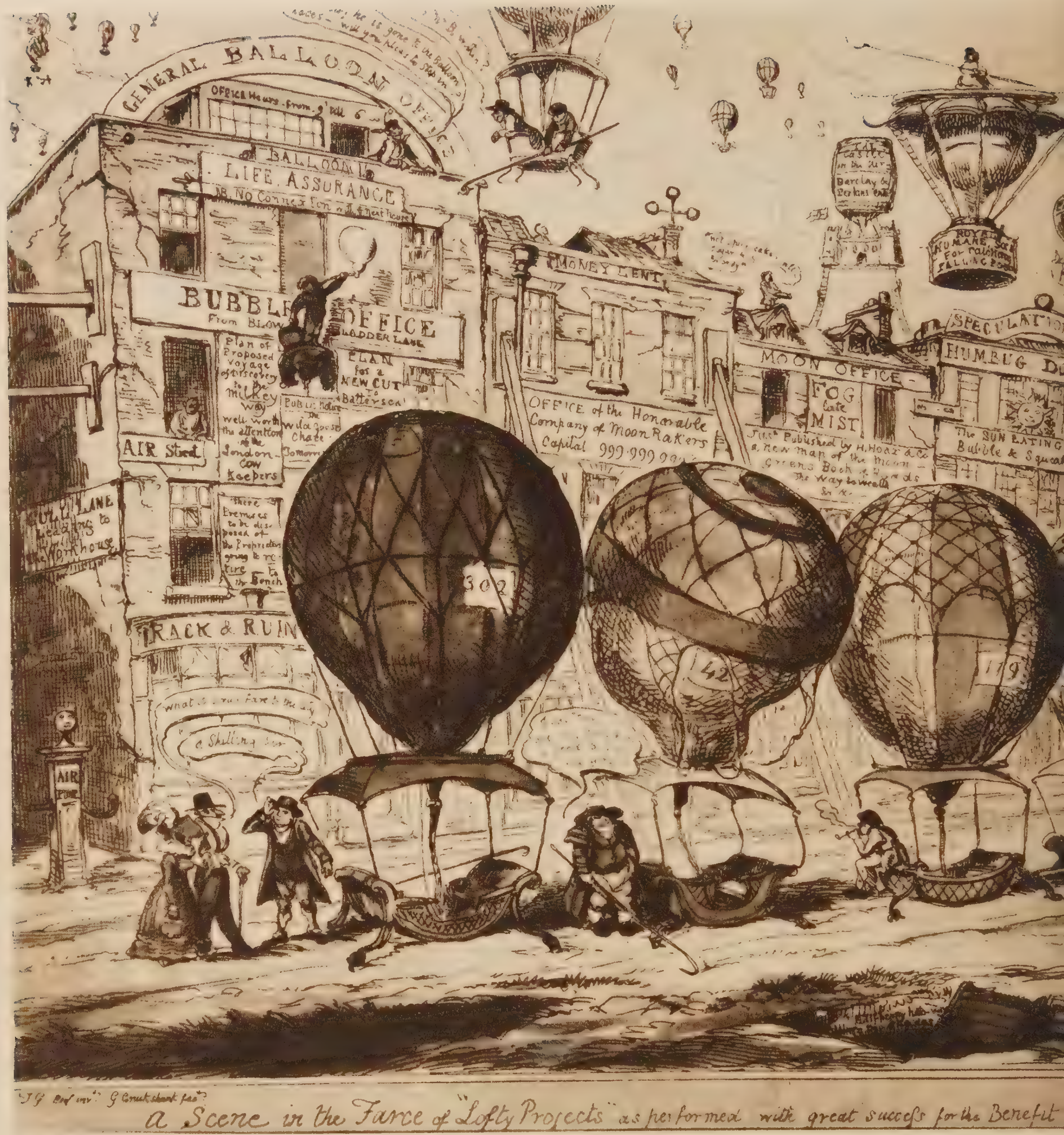

M^lle. ELISA GARNERIN
Prima Areoporista di Francia
22.ª e 23.ª Ascensione e discesa col paracadute a Milano Marzo, 5 Aprile 1824.

Garnerin, now an accomplished aeronaut, met Jeanne-Genevieve Labrosse, Parisian like himself and enthusiastic over the balloon. She had witnessed his first parachute descent. Two years later, she induced him to permit her to go up in his balloon alone and come down in a parachute before the breathless throng below.

She was Andre-Jacques' bride of two years when she first visited England with her husband on his initial mission as Official Aeronaut of the French nation. On his third London ascent from Vauxhall Gardens (August 3, 1802) she was in the balloon, as was also Duncan Glassfurd.

Back on the continent later that year, Madame Garnerin accompanied her husband on many balloon ascents. Unofficially, she was "Aerostiere des Fetes Publiques," her husband was Napoleon's official arranger of aeronautic fetes. Not infrequently, she went up and came down alone. Finally, Garnerin's niece became active as a balloonist and parachutist—or "Aeroporista," as the Italians called it.

The people of Milan hailed Elisa Garnerin as "Prima Aeroporista" of France when she made her twenty-second and twenty-third balloon ascensions and parachute descents in that city (March 5—April 5, 1824). Coming to earth again in her parachute, she waved an Italian flag in one hand and a French flag in the other. Italian engraving of the period in the Harry Guggenheim Collection.


GENERAL BALLOON OFFICE
he is gone to the Balloon — will you please to step in
OFFICE Hours from 9 till 6
BALLOON LIFE ASSURANCE
N.B. No Connexion with the next house
BUBBLE OFFICE
From BLOW
LADDER LANE
Plan of Proposed voyage of discovery to the milkey way well worth the attention of the London Cow Keepers
PLAN for a NEW CUT to Battersea
Publick notice The wild goose Chase Tomorrow
AIR Street
GULL LANE Leading to the Workhouse
These Premises to be disposed of the Proprietors going to retire to the Bench
RACK & RUIN
a Shilling
AIR
MONEY LENT
OFFICE of the Honorable Company of Moon Rakers Capital 999.999.99
MOON OFFICE
FOG late MIST
Just Published by H. Hoax & Co a new map of the moon — Greens Book of Rewards — The Way to wealth
Castle in the Air
Barclay & Perkins Entire
ROYAL HUMANE Soc For catching FALLING Pos
SPECULATION
HUMBUG
The SUN EATING Bubble & Squeak
302
42
119
J.G. Esq inv. G Cruikshank fec.
a Scene in the Farce of "Lofty Projects" as performed with great success for the Benefit

GEORGE CRUIKSHANK (1792–1878) was the greatest of British caricaturists and certainly one of the most effective artist humorists the world has known. We find him making most effective use of the balloon in driving home humorously pointed exposures of English foibles and fallacies at the turn of the first quarter of the Nineteenth Century (1825).

England had been through twenty-two years of war with France, ending with Waterloo and Napoleon's exit from the world stage. The next decade brought the social unrest and speculative fever which always follows great wars. The collapse of the South Sea Bubble of a century before was completely forgotten. Stock gambling and speculative inflation became the order of the day. Everybody who had a few pounds laid by went into some get-rich-quick scheme.

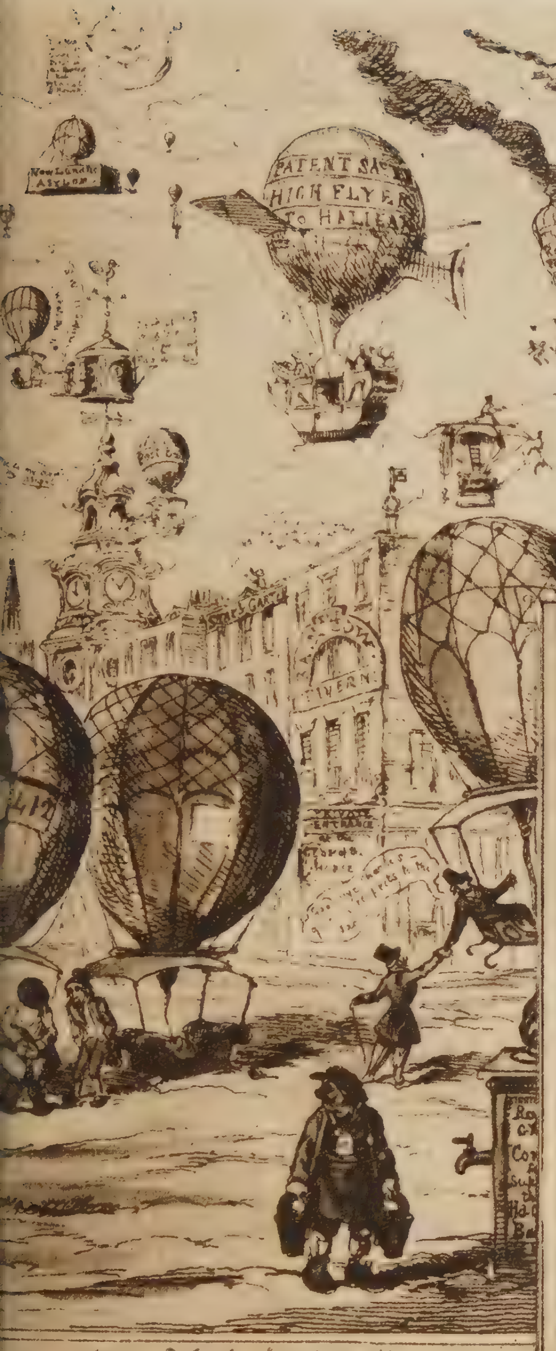
In the famous cartoon (above), "*A Scene in the Farce of 'Lofty Projects' as performed with great success for the Benefit and Amusement of John Bull—A.D. 1825,*" Cruikshank goes far deeper than merely to lampoon the balloon schemes which had become common. His satire is aimed at the whole speculative situation in England. Original Cruikshank cartoon in color in the Harry Guggenheim Collection.

CRUIKSHANK *Lampoons* "BUBBLE" STOCK *Speculations in* FAMOUS BALLOON CARTOON *which Stirs Entire* ENGLISH NATION—1825

THE "AGE OF GOLD" was popularly believed to have come in with the Restoration in France. The rapid growth of the Liberal movement during Louis XVIII's ten years of reign (1814-1824) had finally been stopped by the downfall of Premier Decazes (1820) and in the Paris Chamber of Deputies the Right was again triumphant.

Villele succeeded to the premiership under Charles X, who came to the French throne (1824), and the premier stood back of the appropriation of a thousand million francs to the holders of State property—really the "emigres" of the French Revolution.

To the people of France it seemed only necessary to have the proper influence with the Government for all financial worries to be at an end. The balloon was an easy vehicle for the cartoonist—for all France was alive with interest in aerial matters and their financial possibilities. In the quaint cartoon (below) the cow-balloon is being milked of gold louis for the benefit of the favored class. Original in the Harry Guggenheim Collection.



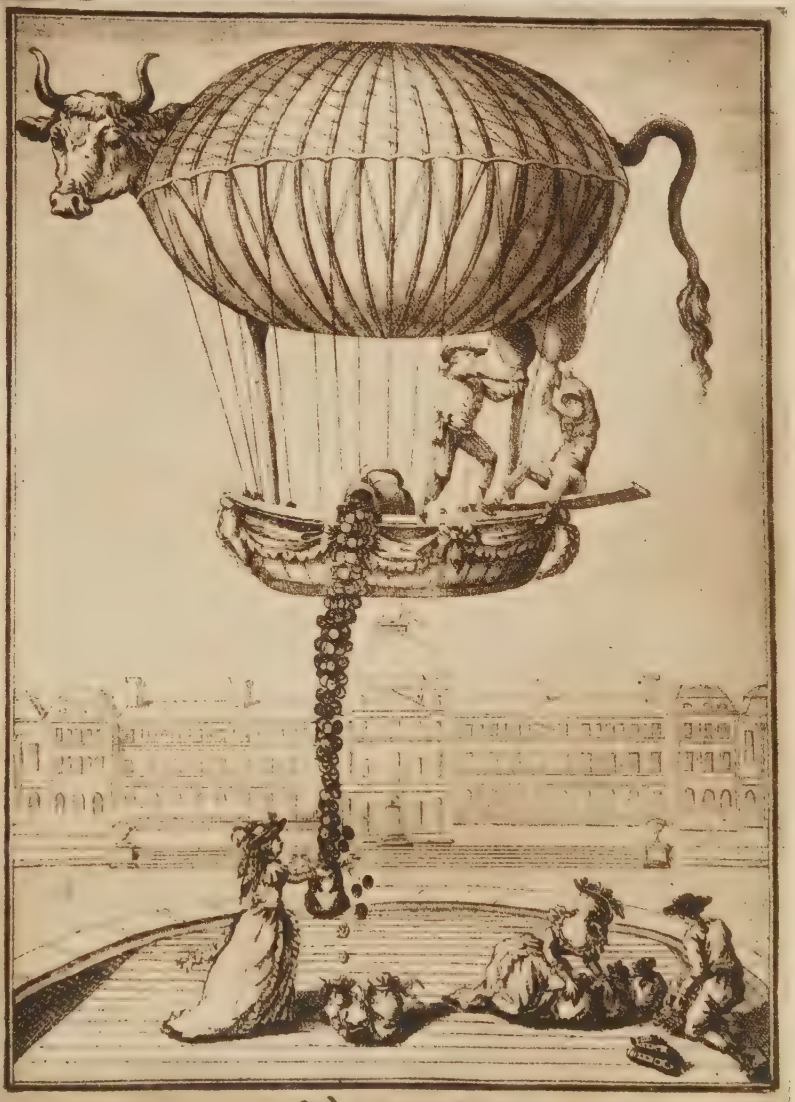
London Pub^d July 17^th 1825 by G Humphrey 24 S^t James's

of John Bull — An° D 1825

Cruikshank was the son of a painter, Isaac Cruikshank, and his grandfather had been an artist. He came by his talent naturally and developed much skill as an etcher.

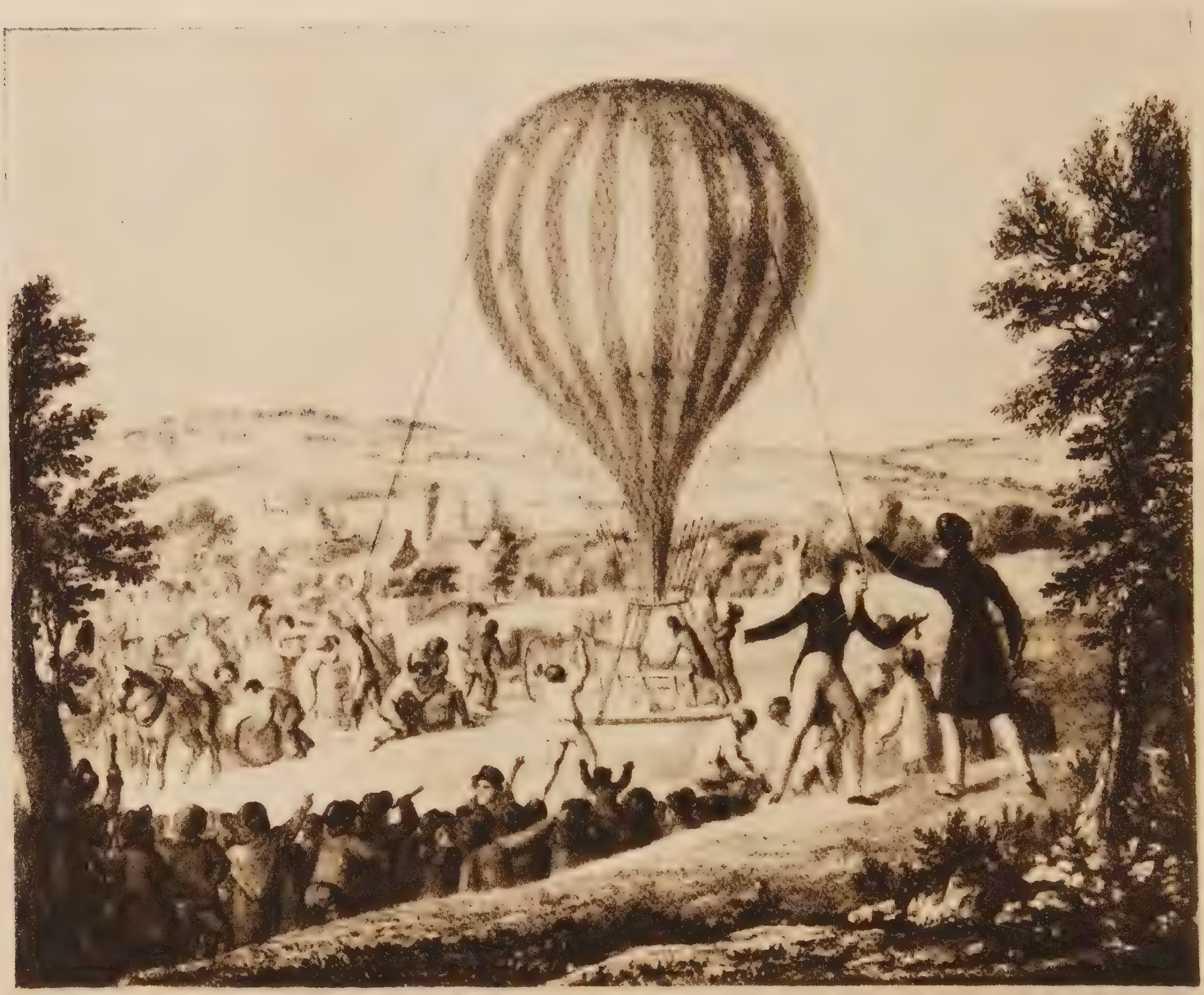
As a cartoonist nothing was sacred from his pen—Tory, Whig or Radical, as the case might be; high life, low life; popular fads or follies in high places—but his hardest thrusts were quite just and with a good nature that disarmed offence.

For sixty-five years, his clever style stood out among his competitors—Gillray, "Short Shanks" and Rowlandson (whose cartoons have already appeared in these pages), Alken, Heath, Dighton, Tenniel and others.



L'ÂGE D'OR.

ENGLAND *Experiments with* DIRIGIBLE BALLOON—1825

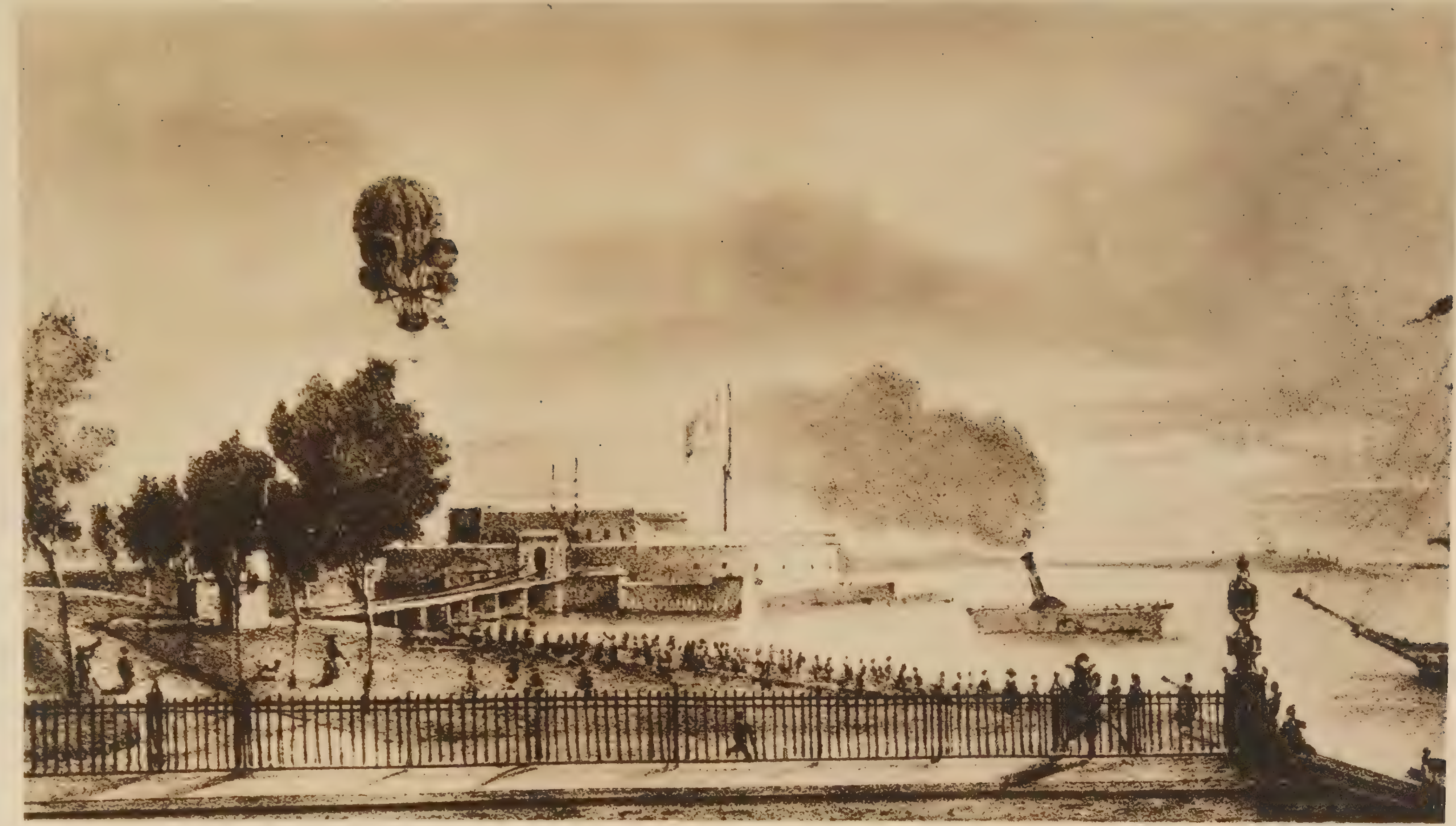


SCIENCE worked for generations on a method of steering a balloon which would "establish the principle of sailing in a horizontal direction at any required point of elevation." P. Cornillot, a balloon amateur, claimed (1825) to have hit upon it. He built a hydrogen balloon, the car of which was a platform bearing a sort of chaise longue. With T. R. Jolliffe, he made his first ascent in this vehicle from the village of Seal, near Sevenoaks, in Kent, England.

Cornillot made two other ascents from St. John's Wood Farm in Kent, (June, 1826), and the comment at the time was that the balloon certainly seemed to sail on a horizontal course in the air. But beyond these meagre facts little or nothing is known of Cornillot.

There no longer was question in the mind of a well-informed person that ascents into the clouds were now feasible and easy; the problem was to direct the aerial craft after one got up there. Throughout the century many sought to discover the answer—to determine some efficient method of steering. Scientists, showmen, professional aeronauts and balloon amateurs all worked on the problem.

In the collection of Major B. F. S. Baden-Powell in England there is a contemporary manuscript account of Cornillot's first ascent, but it is not specific as to his method of directing his balloon along a horizontal course. About the same time Mrs. George Graham repeatedly claimed her husband had an invention to "revolutionize flying" by permitting complete control of the balloon, but this came to nothing. Lithograph (above) by William Gauci, "drawn from nature" at Cornillot's ascent.



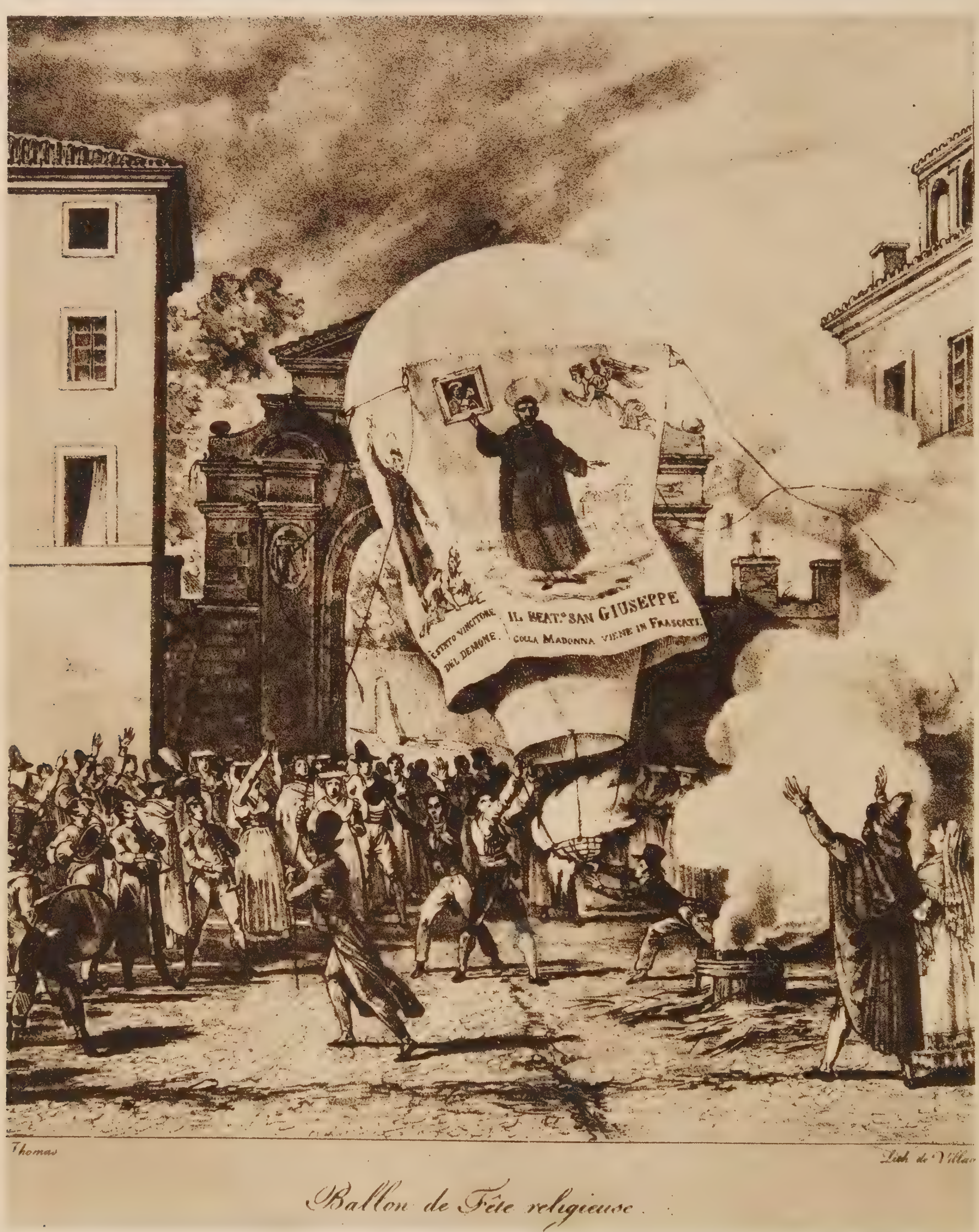
NEW YORK SEES ITS FIRST BALLOON—ROBERTSON OF FRANCE OVER THE BATTERY (1826)

EUGENE ROBERTSON, French aeronaut of first rank, toured the Western World, and had the honour of first exhibiting the passenger balloon to New York. It was a big city for those days with 250,000 people. On a quiet fall evening (October 10, 1826) just after sunset he ascended from Castle Garden (now the Aquarium) in his multiple balloon, accompanied by a lady "of delicate form and handsome countenance."

A great concourse of 50,000 filled the Battery and steamers and row-boats nearby. Says the *New York Evening Post*: "As they gradually arose, the five Balloons, the handsomely decorated car and the distinctive appearance of the aerial voyagers presented one of the most beautiful and interesting sights ever beheld in this city." At 150 feet up the image of a child, suspended from the car by ribbons, made "a pleasing effect."

In 40 minutes the great air conveyance passed out of sight to the southwest over New Jersey. It landed safely at Union, in that state, at 7 P. M. and Robertson left the lady with a Mrs. Brown, a farmer's wife, and re-ascended, finally coming down at 8.15 at Westfield, 25 miles from New York city. He and his balloon reassured anxious friends and inquirers by reappearing at Castle Garden at 1.15 P. M. next day—just in time for a 2 o'clock "extra bulletin."

HISTORIC PRINT *from the* GUGGENHEIM COLLECTION



RELIGIOUS OBSERVANCES AT FRASCATI, ITALY (1828)—Frascati, a suburb fifteen miles from Rome, is the site of the Villa Borghese. Napoleon's sister Pauline was the Princess Borghese.

FIRST AUTOMOBILES—*Carriage Drawn by* KITES—1827

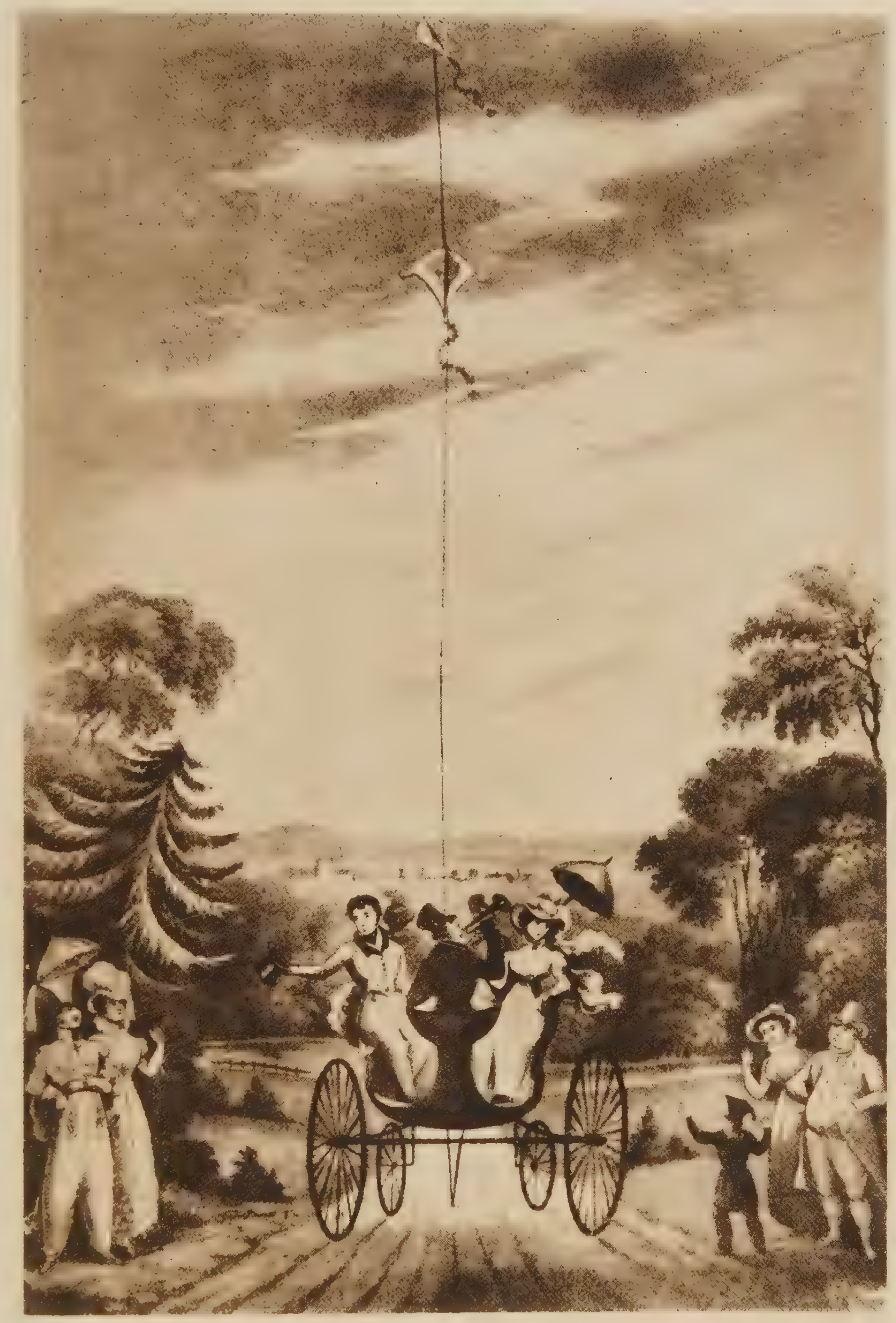
THE FIRST HORSELESS CARRIAGE in the world appeared in England when George Pocock brought out his "Charvolant, or Kite Carriage" (1827).

It did not run under its own power, but was drawn by kites, which brings the charvolant into the story as a step in human progress. Pocock's early experiments consisted in hitching a great kite to the family buggy and drawing it along over the moor.

He finally had constructed a special four-wheel carriage he called a "Charvolant"—this was drawn along the road by two kites. In reality, only the big "draft" kite exerted any pull on the carriage; the smaller "pilot" kite above held the big one in the air when it became relaxed or was intentionally being allowed to float edgewise on the wind.

Pocock proved that the power of common circular-headed kites was such that two large kites, like those in this old aquatint, with a plane surface of 100 square feet, had a draught power of 300 pounds in a gentle breeze and three times that in a gale of wind.

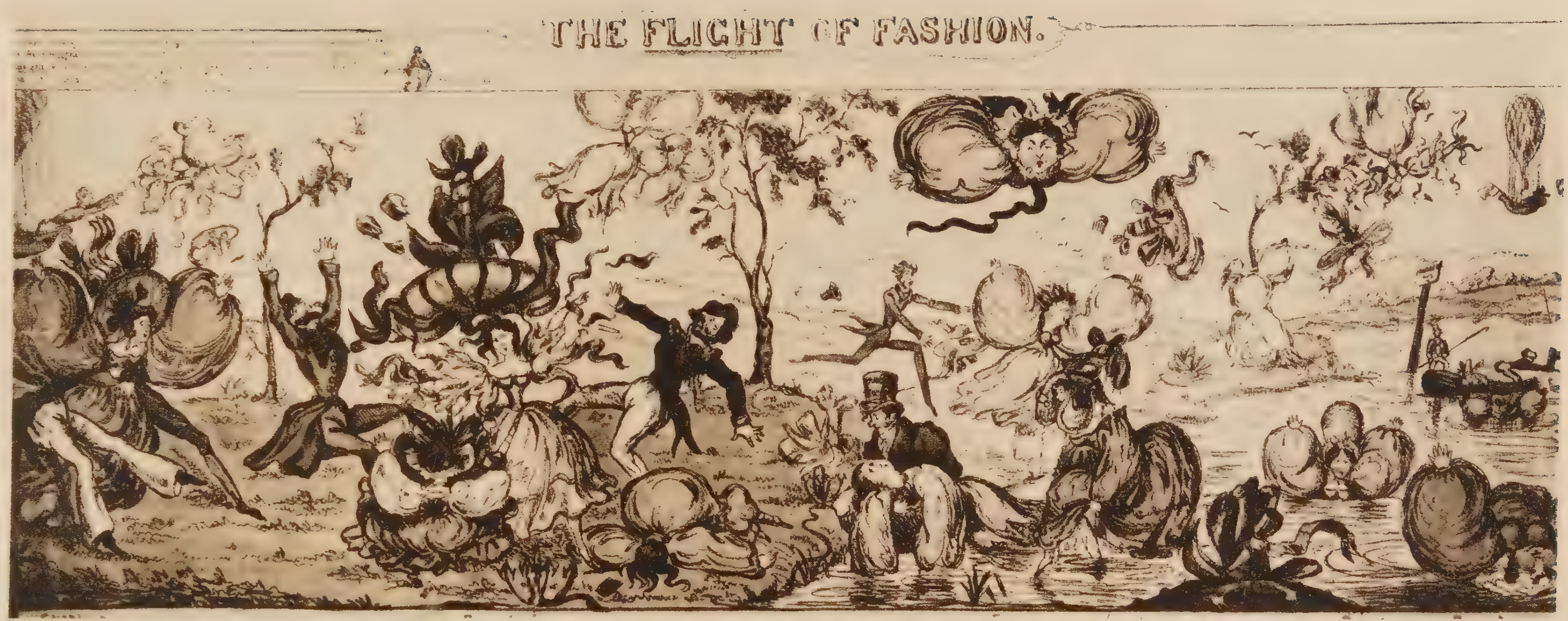
The inventor claimed to have covered several miles of distance between Bristol and Marlborough, England, at the high speed of 20 miles an hour (January 8, 1827) and to have easily caught and passed the London mail coach. The big kite was steered by two cords and could be pulled edgewise to the wind if one wished to slow down or stop.



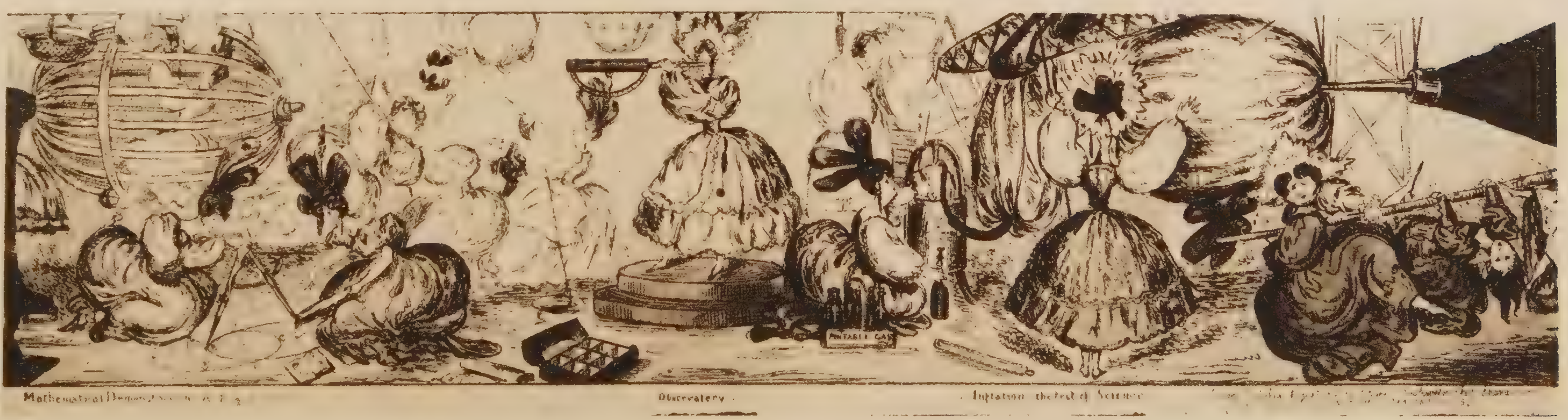
Pocock was a Bristol (England) schoolmaster. He experimented with kites and "horseless carriages" and developed what he called the "Aeropleustic Art." He wrote a book *The Aeropleustic Art, or Navigation in the Air by the Use of Kites or Buoyant Sails* (1827).

Pocock experimented first with man-raising kites. He was the first man in England to make serious tests of this kind. He claimed for his daughter the honor of the "First Aeropleust." Young Miss Pocock soared aloft in an arm chair, which was lashed to the great kite's main line, to about 300 feet altitude.

Then Pocock's son tried it and scaled the brow of a 200-foot cliff, detached the arm chair and slid down the line in it. The Bristol pedagogue proposed to use his kites for marine purposes—for towing boats or to carry life-lines to wrecked vessels. He also suggested their possibilities for reconnaissance in warfare. (That takes us back some 2,500 years to actual accomplishment of just this by the Chinese.) Old aquatint above, in color, by Percy Roberts is the frontispiece to Pocock's *Aeropleustic Art.*


THE FLIGHT OF FASHION.

ENGLISH STYLISTS INTRODUCE BALLOON SLEEVES IN LADIES' GOWNS—"Paul Pry" (John Poole) Satirizes the Latest London mode.
Original in the Harry Guggenheim Collection.


PORTABLE GAS
Observatory
Inflation the test of Science

"FLIGHT *of* FASHION"—*Balloon Styles Hit* LONDON—1829

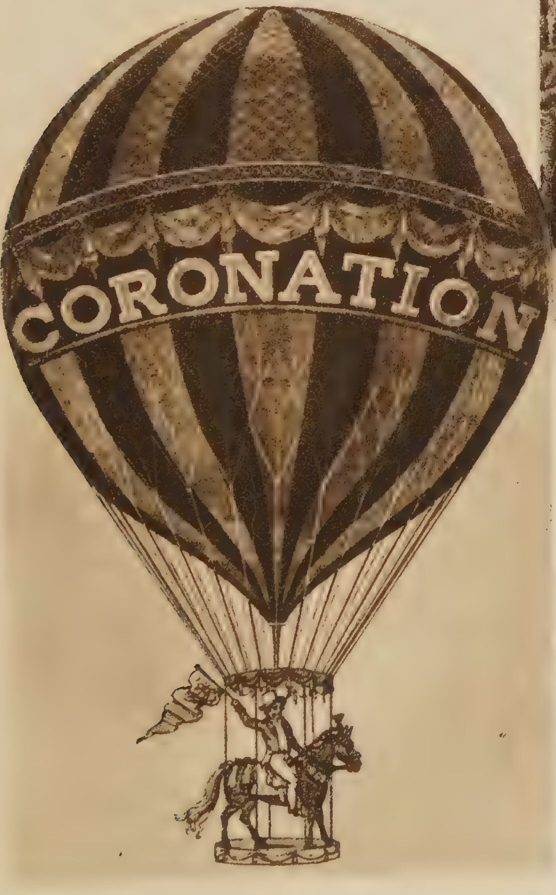
ENGLAND *and* ITALY *Advance* SCIENCE *of the* AIR

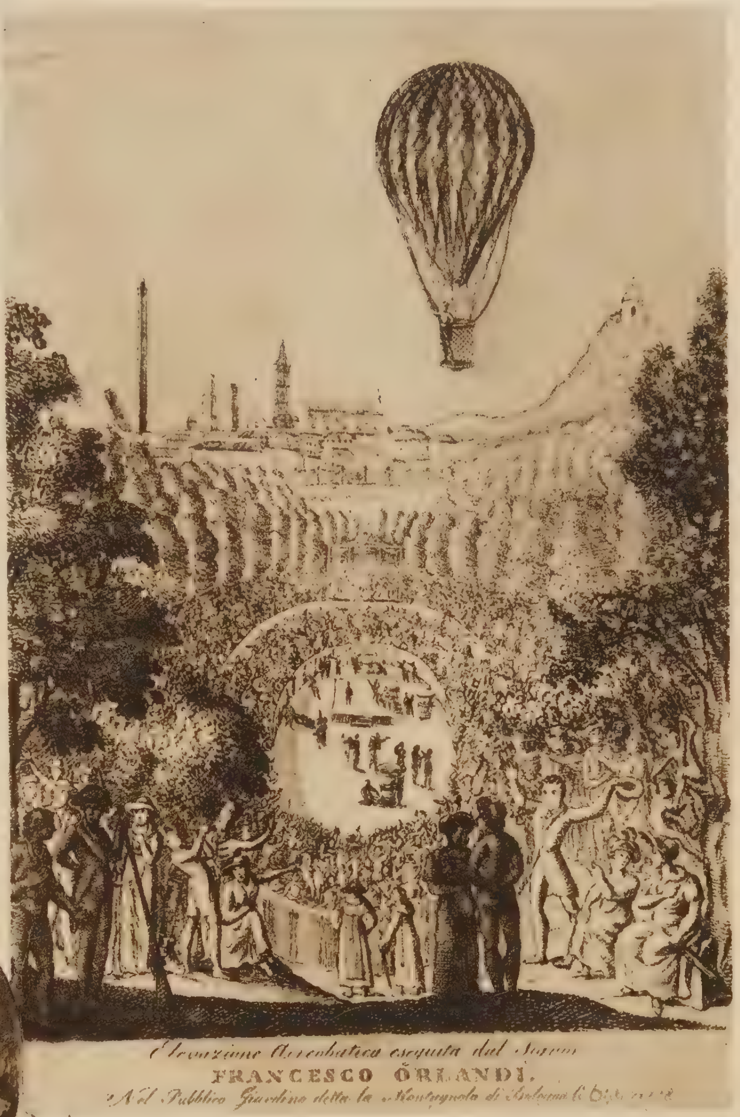
CHARLES GREEN introduced the equestrian ascent in England. The first equestrian ascent in the world was that of Tetsu-Brissy in Paris (1798), which has been described (Page 227). It was thirty years afterward that Green took up this novel method of going into the sky astride a steed.

Green's most celebrated mounted ascent was from the Eagle Tavern, City Road, London (July 29, 1828), when he ascended to a great height on the back of his pony, which appears to have stood the aerial journey with much fortitude. They landed safely at Beckenham, Kent, an hour later.

He was now becoming the most celebrated professional aeronaut in England. His fiftieth ascent was made (April 1826). He had twice been into the air astride his pony before the mounted ascent described above, though not to great heights or for as long a time.

The first night ascent in England was made by Green (July 1826), though night ascents had ceased to be of special moment on the continent. In his famous "Coronation Balloon," he had made his first ascent during the coronation festivities of George IV (1821). It was made of alternate gores of blue, crimson and gold silk and measured 107 feet in circumference. Print (below) in Cuthbert Collection.




Elevazione Aereobatica eseguita dal Signor
FRANCESCO ORLANDI.
Nel Pubblico Giardino detto la Montagnola di Bologna li

FRANCESCO ORLANDI came into Italian aeronautics later than the famous trio of old masters of the balloon—Zambeccari, Andreani and Andreoli. After he made his first ascent at Bologna (1825) he quickly became the best known aeronaut in Italy.

For two decades his name was connected with the principal aerial events in his native country. The old print (above) in the Harry Guggenheim Collection is of an ascension made by Orlandi from the Public Gardens in Bologna (November 16, 1828) on which occasion he used a gas balloon, as, in fact, he usually did.

Orlandi constructed what he called an "Aero-Montgolfiere" which was half gas balloon and half hot air balloon—a spherical gas balloon above and an inverted conical hot air balloon below. The upper rim of the lower balloon formed a parachute in case of need. This curious aerostat was fitted with triangular oars and rudder.

Orlandi actually built it and made ascents in it, not only in Italy but in Spain, making an honest effort toward dirigibility even if he contributed little of value toward solving that problem.

First AMERICAN *to* FLY *on Western* CONTINENT—1830

CHARLES
FERSON
DURANT—
AMERICA'S
FIRST
AERONAUT

Born in
New York
(1805)
Died in
Jersey City
(1873)

Scientist
Naturalist
Astronomer
Inventor
Scholar
Poet
Philanthropist
Aeronaut

Daguerreotype
Portrait
Among
Durant
Family
Archives.

AMID the thunder of artillery and the blare of brass band music, America finally gets into Aeronautics in earnest—as Charles F. Durant, of New York, ascends from Castle Garden (September 9, 1830).

A cheering throng of twenty thousand saw the first American Aeronaut ascend about 4.30 in the afternoon. Two hours later perhaps twenty people saw Durant land safely at South Amboy, New Jersey.

Cannon fire announced the beginning of inflation of his balloon with hydrogen gas. The aeronaut ascended waving American flags. Durant made eleven other ascensions in America, six from Castle Garden.

President Andrew Jackson was present and congratulated the aeronaut. Black Hawk, noted Indian chief, was an honored guest. Durant's other ascensions were in Albany (1833), two in Baltimore (1833) and his last three in Boston (1834). During one of the last mentioned ascensions he fell into the Atlantic, outside Boston harbor, where his "gum-elastic life preserver" saved him.

PART XIV

AMERICA *Enters* AIR—*First American* AERONAUT

When FIRST RAILROADS *were being* BUILT *in Days of* ANDREW JACKSON

A TRIUMVIRATE of mighty powers now enters upon the "Conquest of the World"—three dynamic forces: transportation and communication by land and sea, with their ultimate victory in the dominion of the air.

As we stand here a moment and look at the world about us (1830), we see the steamship struggling against the elements of the sea; the first trains drawn by steam locomotives fighting their way on land; and the explorers of the air engaged upon their hazardous adventures.

All three must battle their way through perilous times, leaving behind them a wake of tragedy and disaster. The steamship is the first to challenge the elements—to pay the price of all human progress. The first steamships nearly all met with tragic fates, thousands of ships lost at sea with tens of thousands of lives.

Every new epoch in world progress has been bought at this same tremendous cost; every war against the elements and every war for economic and political freedom. And yet, this cost is infinitesimal compared with the benefits that are accrued from these same forces.

We now witness the building of the first railroads, while the first American starts on his "Grand Aerial Voyage" in New York (1830); the first train to be drawn by a steam locomotive in America (1831); and the first voyage of the Steamship *Royal William* from Nova Scotia to England (1833), while slavery is being abolished throughout the British Empire.

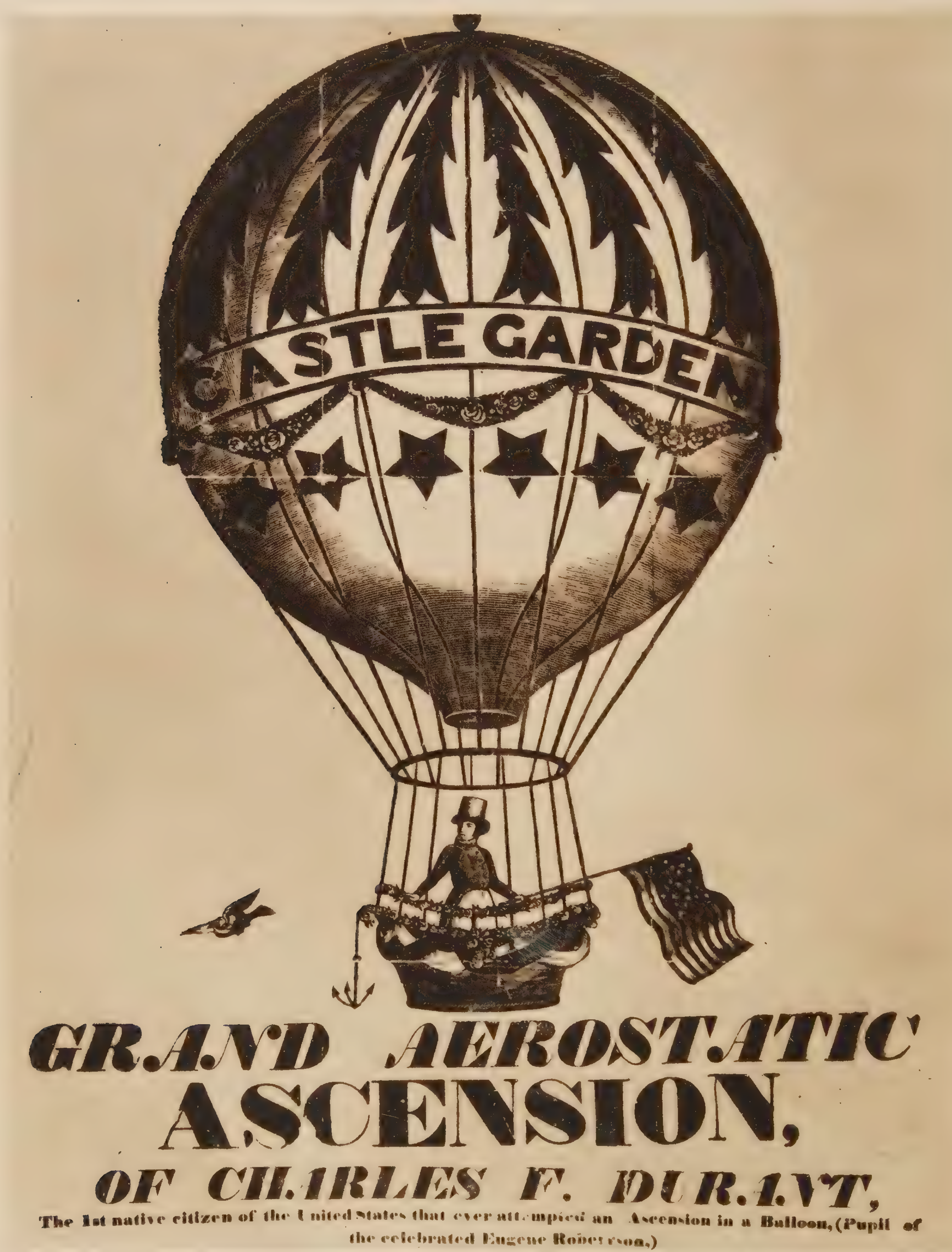
The telegraph is invented by Morse in the United States (1835) while the "First Aerial Airship Proposes to Fly Around the World" with "regular communication between London, Paris and the capitals of Europe." The First Air Voyage between England and Germany is being made by Green (1836) and the Massacre of the Alamo is taking place in Texas.

During this period Colt invents the revolver; Sauria and Philips the phosphorus match; Wheatstone comes forward with the electro-magnetic telegraph; Goodyear is experimenting with the vulcanization of rubber and Daguerre and Niepce with photography.

Tragedies at sea are following with alarming succession: the *Hornet* is lost in a gale in the Gulf of Mexico with 140; the Brig *Billow* goes down on Ragged Island, Nova Scotia, with 137; the *Lady Sherbrooke* is wrecked on its voyage from Ireland to Quebec with 273; the Steam-packet *Rothesay Castle* is lost near Liverpool with 100; the Steamship *Brandywine* burns in the Mississippi River with 110.

The *Lady of the Lake* hits an iceberg en route from England to Quebec with 215; the *Amphitrite*, bound for Australia with British women convicts, goes down with 128; the Steamboat *Royal Tar* is burned in Penobscot Bay with 32; the *Bristol*, from England to New York, is wrecked with 77; the *Jane and Margaret* is lost near the Isle of Man with 200; the Steamer *Sherrod* is burned on the Mississippi with 175; the Steamship *Home* is wrecked in the Atlantic with 100, the Steamboat *Monmouth* sinks in collision in the Mississippi with 234—and so goes the toll until it mounts into thousands as science paves its way over the bodies of men to give to the world a new era.

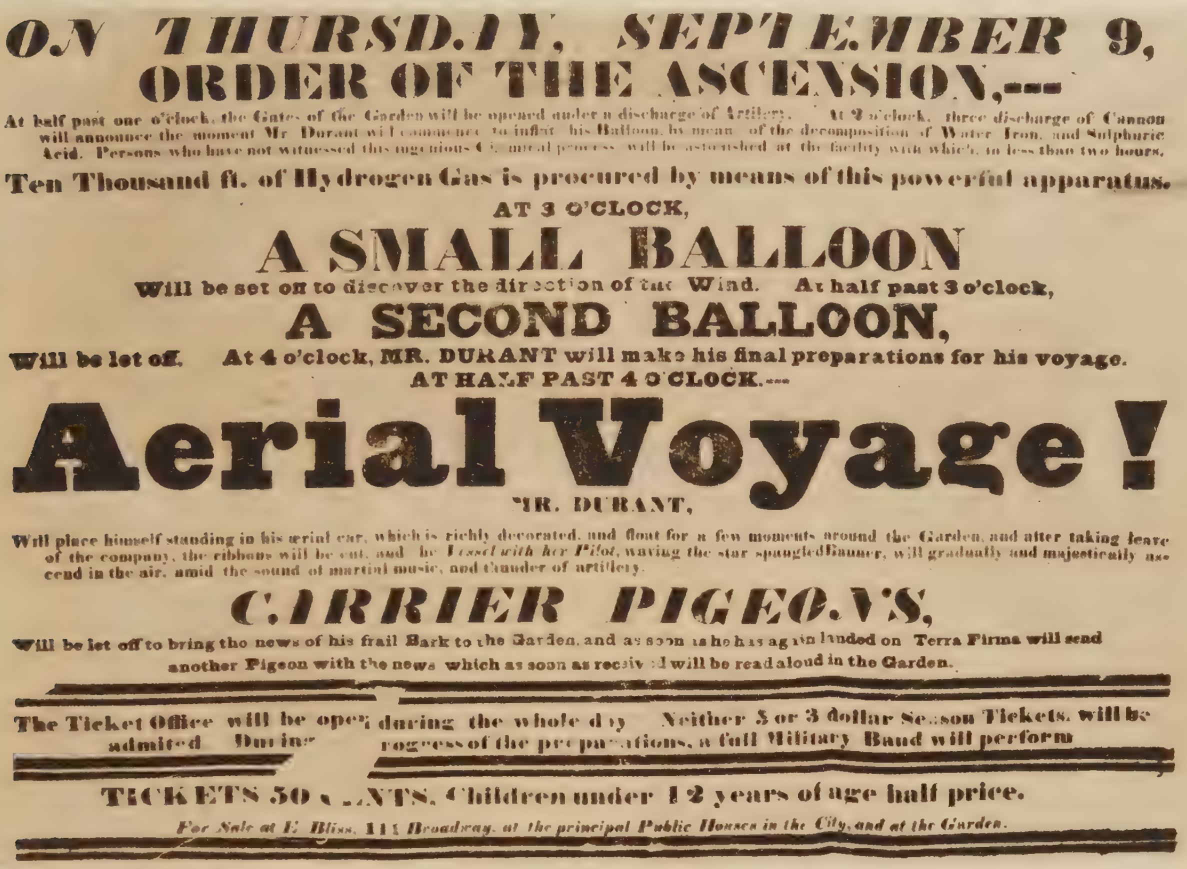
Historic BALLOON *Carrying* AMERICAN FLAG *into the* AIR


CASTLE GARDEN

GRAND AEROSTATIC
ASCENSION,
OF CHARLES F. DURANT,
The 1st native citizen of the United States that ever attempted an Ascension in a Balloon, (Pupil of the celebrated Eugene Robertson.)

UPPER HALF OF BROADSIDE ANNOUNCING FIRST ASCENSION OF AMERICAN AERONAUT
Original in Collection of Americana in New York Public Library.

Original BROADSIDE *of* "GRAND AERIAL VOYAGE"—1830



ON THURSDAY, SEPTEMBER 9,

ORDER OF THE ASCENSION,---

At half past one o'clock, the Gates of the Garden will be opened under a dischage of Artilery. At 2 o'clock, three discharge of Cannon will announce the moment Mr Durant wil commence to inflat his Balloon, by mean of the decomposition of Water Iron, and Sulphuric Acid. Persons who have not witnessed this ingenious Chemical process will be astonished at the facility with which, in less than two hours,

Ten Thousand ft. of Hydrogen Gas is procured by means of this powerful apparatus.

AT 3 O'CLOCK,

A SMALL BALLOON

Will be set off to discover the direction of the Wind. At half past 3 o'clock,

A SECOND BALLOON,

Will be let off. At 4 o'clock, MR. DURANT will make his final preparations for his voyage.

AT HALF PAST 4 O'CLOCK.---

Aerial Voyage!

MR. DURANT,

Will place himself standing in his ærial car, which is richly decorated, and float for a few moments around the Garden, and after taking leave of the company, the ribbons will be cut, and the *Vessel with her Pilot*, waving the star spangledBanner, will gradually and majestically ascend in the air, amid the sound of martial music, and thunder of artillery.

CARRIER PIGEONS,

Will be let off to bring the news of his frail Bark to the Garden, and as soon as he has again landed on Terra Firma will send another Pigeon with the news which as soon as received will be read aloud in the Garden.

The Ticket Office will be open during the whole day Neither 5 or 3 dollar Season Tickets, will be admited During progress of the preparations, a full Military Band will perform

TICKETS 50 CENTS, Children under 12 years of age half price.

For Sale at E. Bliss, 111 Broadway, at the principal Public Houses in the City, and at the Garden.

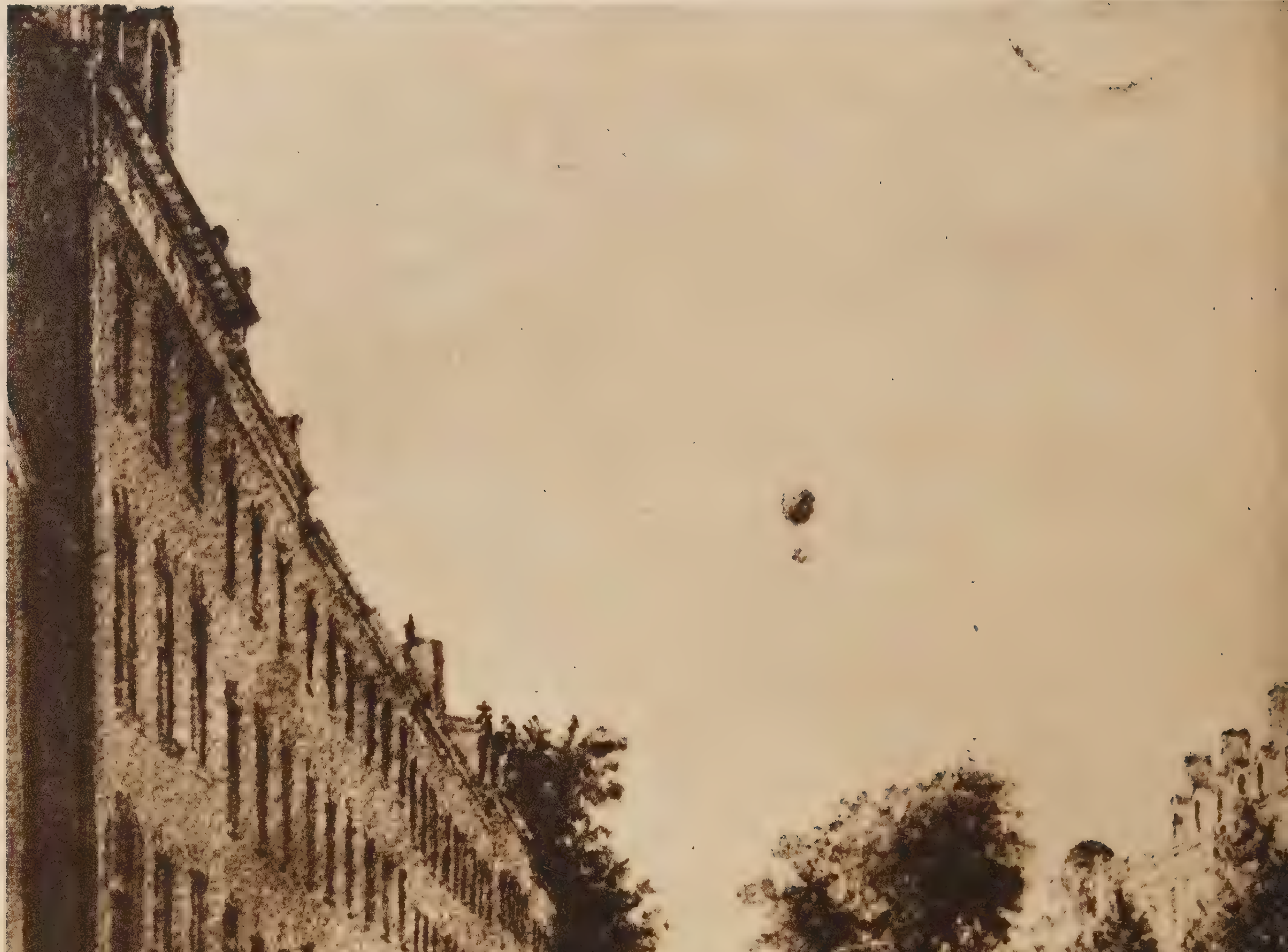
CHARLES FERSON DURANT, America's First Aeronaut, was an unusual character, dimly remembered by great grandchildren now living as "a wonderful grandfather." He was far more than aeronaut, and only made ascensions for a few years in the furtherance of science. His ascents were fully reported in the press throughout America, and in London and Paris.

He was widely honored as a scientist, naturalist, inventor, scholar, astronomer, poet and philanthropist. He wrote a poem about each balloon ascent. Going to Paris (1828) to study aerostation with Eugene Robertson he spent two years in investigations. In an ascension by Robertson and Durant in Paris, their balloon valve clogged at 2,000 feet. Durant with opened pocket knife in his teeth, climbed up the netting outside the balloon to the top and fixed the valve, returning by the same route.

Durant was born in New York City of a well-to-do family and gave himself to scientific pursuits at an early age. As the result of much research he wrote "*Algae and Corallines of the Bay and Harbor of New York*" (1860) the first work of the kind in America.

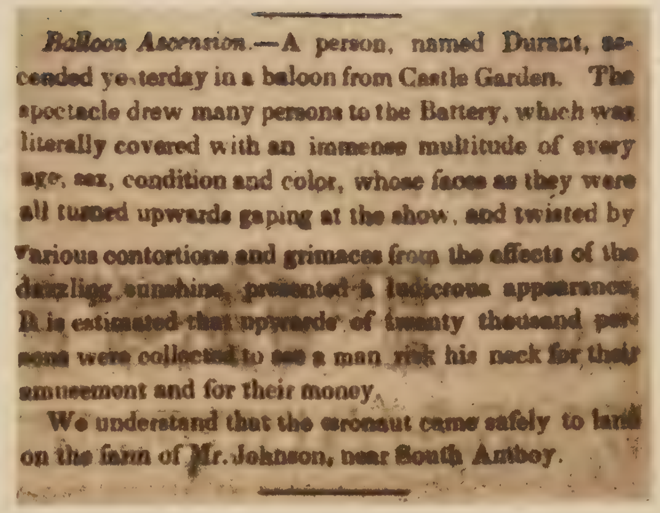
He demonstrated the practicability of silkworm culture in America, importing mulberry trees and silk cocoons from Japan. The American Institute of Science gave him a medal for raw silk and silk thread produced in this country. His descendants speak of many other medals he won.

Durant's active mind developed the explosive quality of saltpetre. His final years were devoted to the electron theory —*far ahead of his time*, and what he knew as the "Universal Law." Durant's "Physical Astronomy," embodying his mature thought, was published just as he died (1873). It was so far beyond his times and considered so absurd that all but one copy of a large edition were destroyed by his friends after his death. Durant's Jersey City home (right) from photograph in the possession of the Durant family.



DURANT'S BALLOON OVER PARK PLACE, NEW YORK (LOOKING TOWARD CITY HALL PARK)—1830 The corner of Broadway in the left background is the present site of the Woolworth Building.

Original painting in Collection of New York Historical Society.



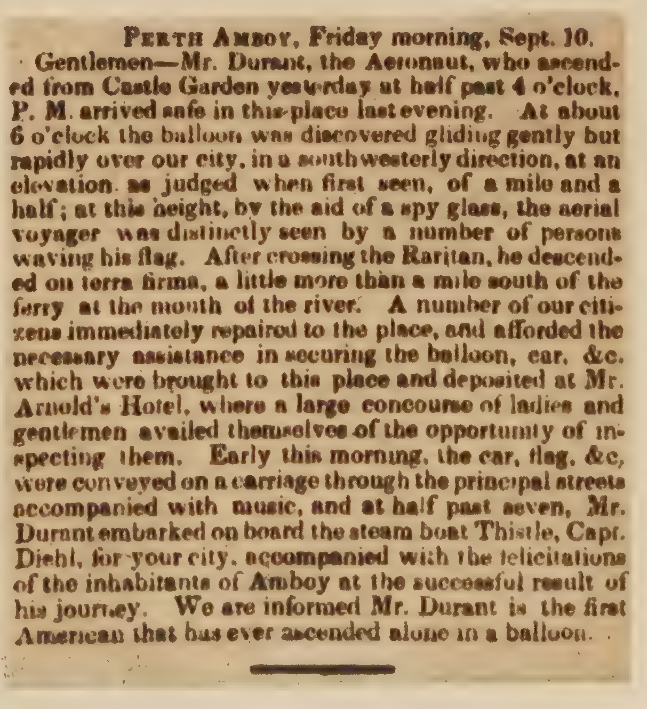
Balloon Ascension.—A person, named Durant, ascended yesterday in a baloon from Castle Garden. The spectacle drew many persons to the Battery, which was literally covered with an immense multitude of every age, sex, condition and color, whose faces as they were all turned upwards gaping at the show, and twisted by various contortions and grimaces from the effects of the dazzling sunshine, presented a ludicrous appearance. It is estimated that upwards of twenty thousand persons were collected to see a man risk his neck for their amusement and for their money.

We understand that the aeronaut came safely to land on the farm of Mr. Johnson, near South Amboy.

The facsimile (above), from the *New York Evening Post* (September 10, 1830), tells the story of the first ascension of Charles F. Durant, first American aeronaut. The facsimile (below) is of a letter published in the *Evening Post* of September 11, 1830 telling of his safe landing in Perth Amboy.

Durant used a spherical balloon—made a dozen ascents in over four years—and lived nearly forty years more in the belief that he had got out of ballooning all there was in it.

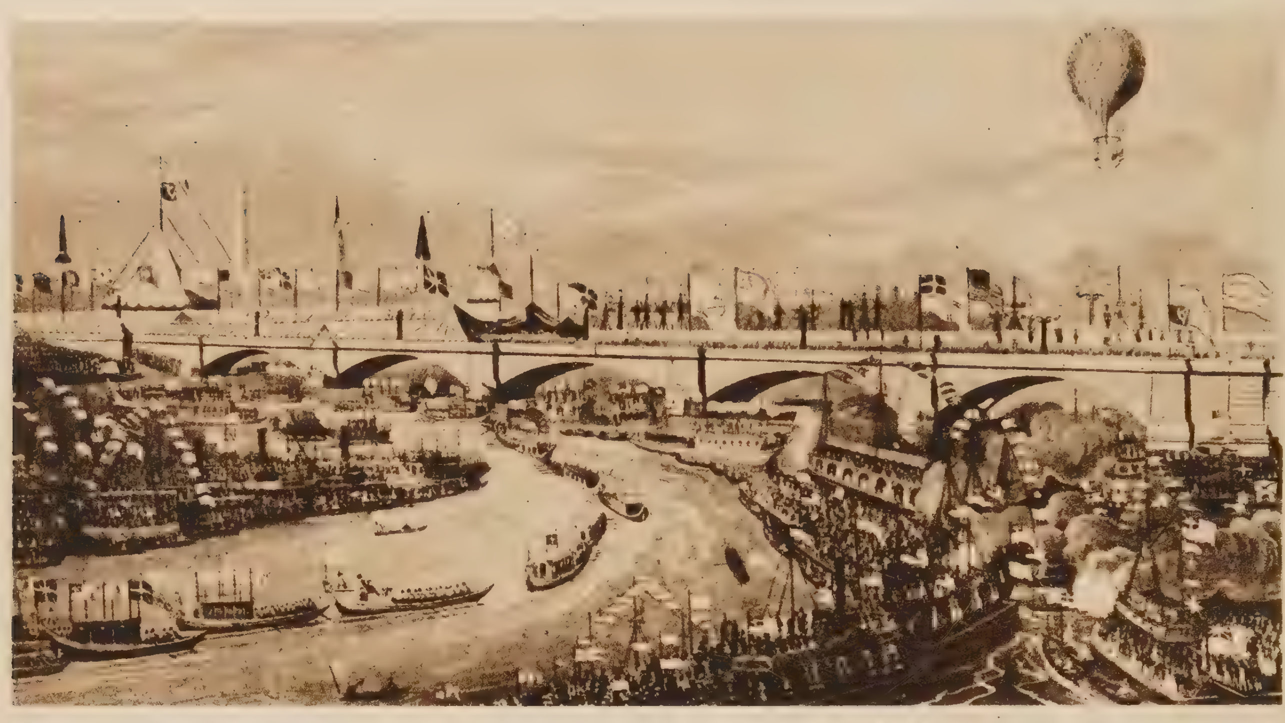
He believed not only that a practical air device must be at the complete control of the steersman, but that it must establish mechanical mastery of the air. He freely predicted the coming of wings "by which the human race shall fly."



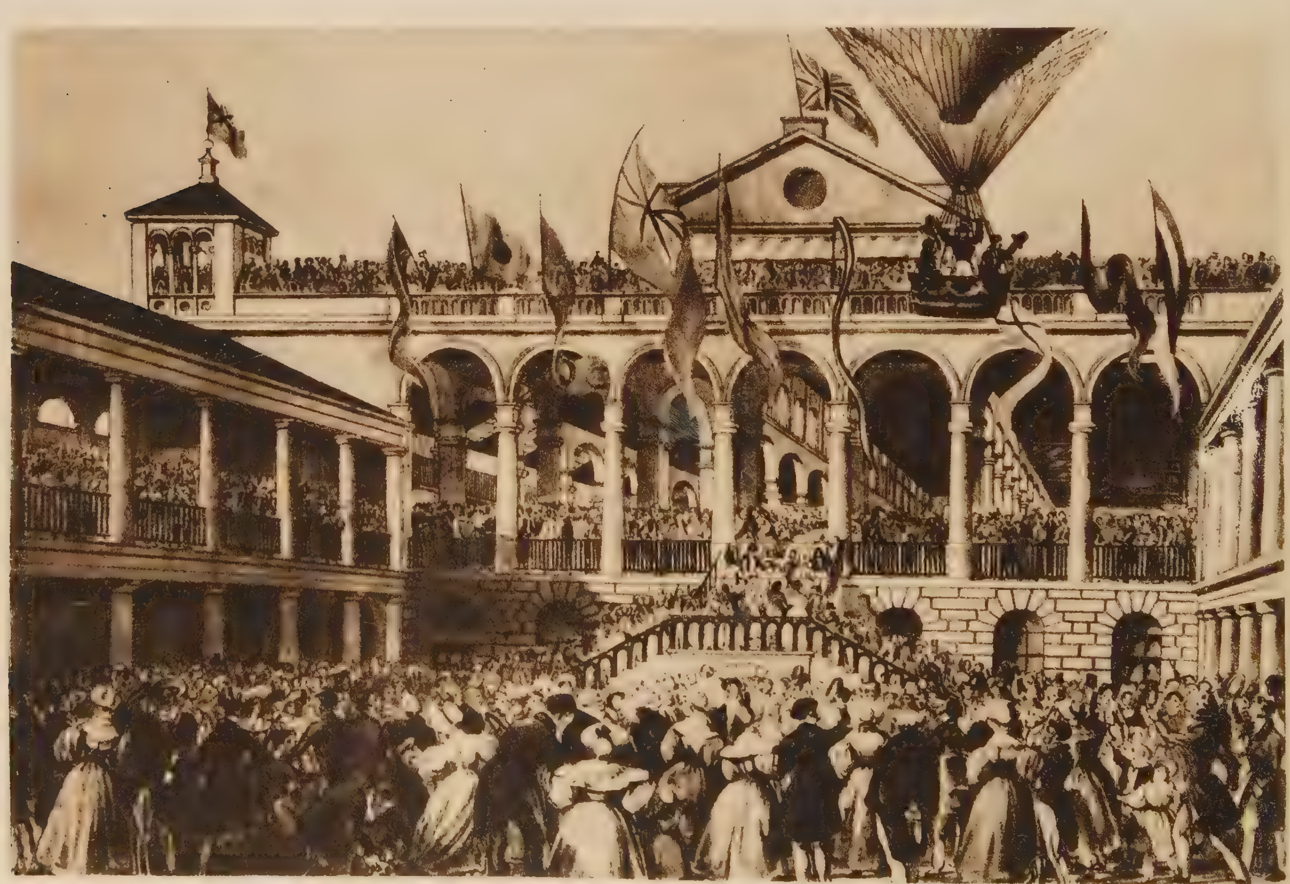
PERTH AMBOY, Friday morning, Sept. 10.

Gentlemen—Mr. Durant, the Aeronaut, who ascended from Castle Garden yesterday at half past 4 o'clock, P. M. arrived safe in this place last evening. At about 6 o'clock the balloon was discovered gliding gently but rapidly over our city, in a southwesterly direction, at an elevation as judged when first seen, of a mile and a half; at this height, by the aid of a spy glass, the aerial voyager was distinctly seen by a number of persons waving his flag. After crossing the Raritan, he descended on terra firma, a little more than a mile south of the ferry at the mouth of the river. A number of our citizens immediately repaired to the place, and afforded the necessary assistance in securing the balloon, car, &c. which were brought to this place and deposited at Mr. Arnold's Hotel, where a large concourse of ladies and gentlemen availed themselves of the opportunity of inspecting them. Early this morning, the car, flag, &c, were conveyed on a carriage through the principal streets accompanied with music, and at half past seven, Mr. Durant embarked on board the steam boat Thistle, Capt. Diehl, for your city, accompanied with the felicitations of the inhabitants of Amboy at the successful result of his journey. We are informed Mr. Durant is the first American that has ever ascended alone in a balloon.

GALA BALLOON *at the Opening of* LONDON BRIDGE—1831



CHARLES GREEN MAKING HISTORIC ASCENT BEFORE WILLIAM IV (1831)—Contemporary print (above) in Cuthbert Collection.—George Graham's Ascent adds to festive opening of New Hungerford market, London (1833)—Period engraving (below) in the Harry Guggenheim Collection.



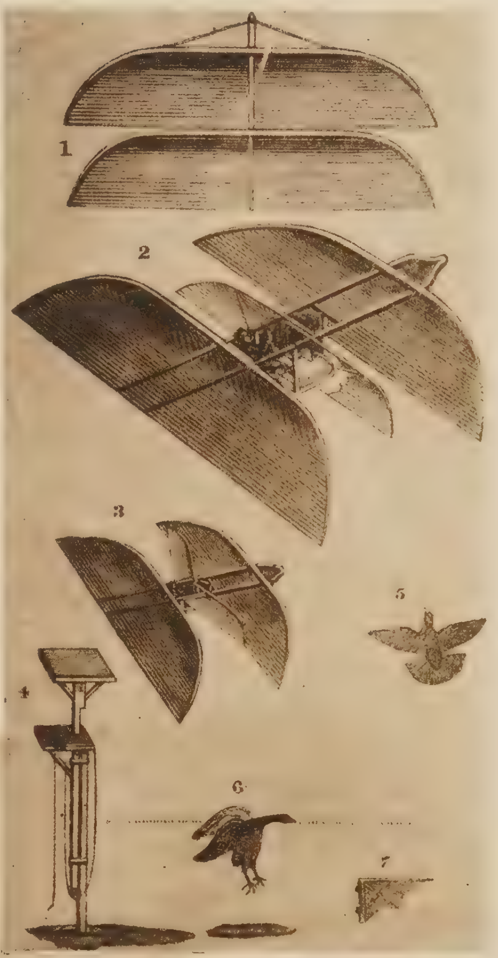
INVENTORS *Pursue Experiments on* FLYING MACHINE—1835

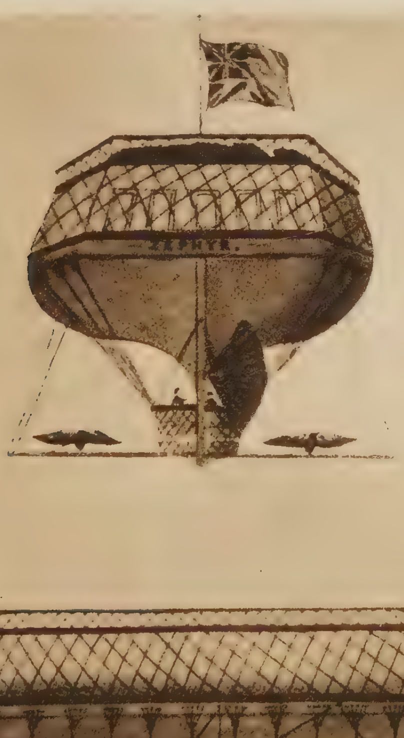
THOMAS SIMMONS MACKINTOSH of London, proposed "an airship which was to sail the skies, whither its steerman would, by the power of harnessed eagles." Even amid the growing enlightenment of the Nineteenth Century those who dreamed of a dirigible balloon had not got away from the notion that birds should pull it, as horses drew earthbound vehicles below.

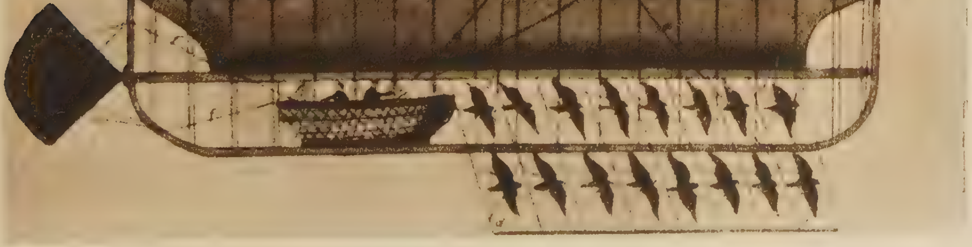
In a striking letter to the London *Morning Advertiser* (July 1835) Mackintosh strongly disapproves of Lennox's "Eagle" airship (Page 276). He advances the idea of driving birds hitched to a balloon, which really derives from Lucian, Greek sophist and satirist (125–190 A.D.) and which we have seen and shall see recurring in these pages from time to time. Mackintosh had been a frequent contributor to contemporary mechanical journals and his statements were taken seriously.

"There is a mode by which balloons may be conducted (in moderate weather) in safety," he writes, "and certainly this is to be accomplished by having a sufficient number of the larger birds, such as hawks—eagles would do better, if they could be tamed—but perhaps strong pigeons would do very well, and let them be harnessed to the balloon, to draw it along." Mackintosh adds that a helm might be of some service, though believing less in that than in the ability of their driver to rein the birds in the desired direction.

The inventor published a *Sketch of the Aerial Ship*. His dirigible was formed like the hull of a ship, with even a framework double keel, with a fan-shaped rudder and a boat-shaped car between the two keels, from which the aeronauts drove sixteen eagles, harnessed eight abreast. Colored lithograph (below) of Mackintosh's airship is in the J. E. Hodgson Collection.





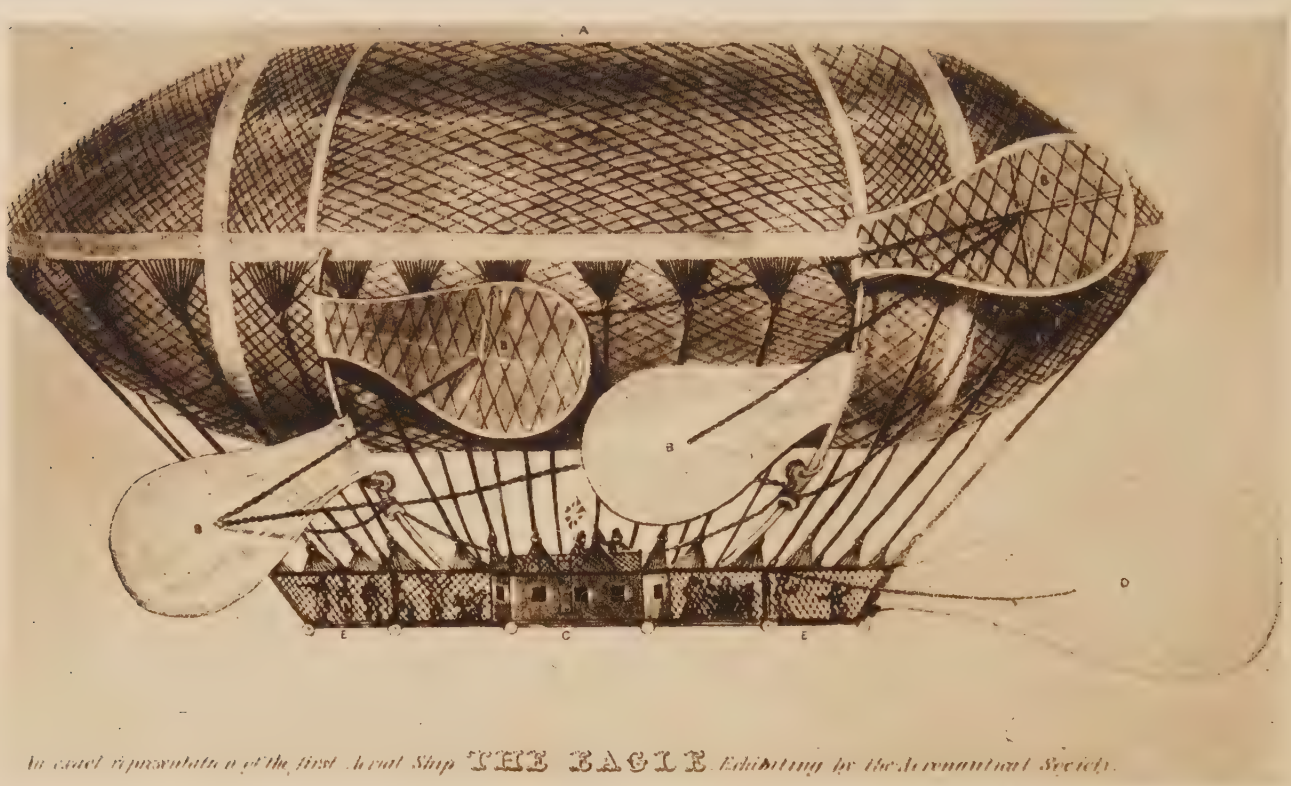


THOMAS WALKER, whom we first met (1810) on page 237, continued to be a figure of importance in aerial development through the ideas in his "Treatise upon the Art of Flying" (Hull, 1810).

His book gained a sale in France, Germany, Holland and other European countries, and was published in American editions (1814 and 1816). He himself published a second edition at Bristol (1831) which remained a standard work for some time.

Walker had given extensive study to bird flight and had many novel ideas for reproducing it artificially. He undoubtedly influenced flying machine development, though nothing was built directly upon his designs. The frontispiece (above) is from his Bristol edition.

First Proposed AERIAL CRAFT *to* FLY *Around* WORLD—1835


A
B
B
B
C
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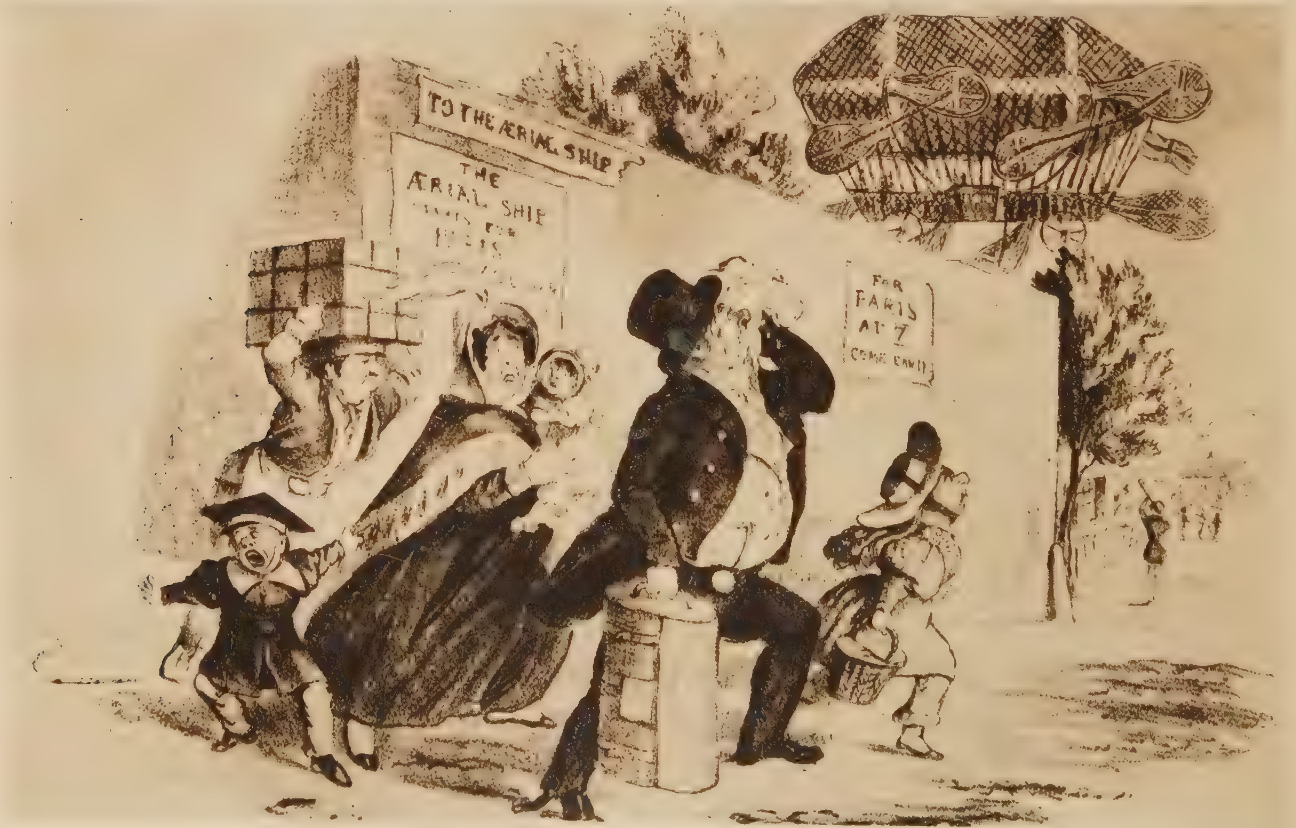
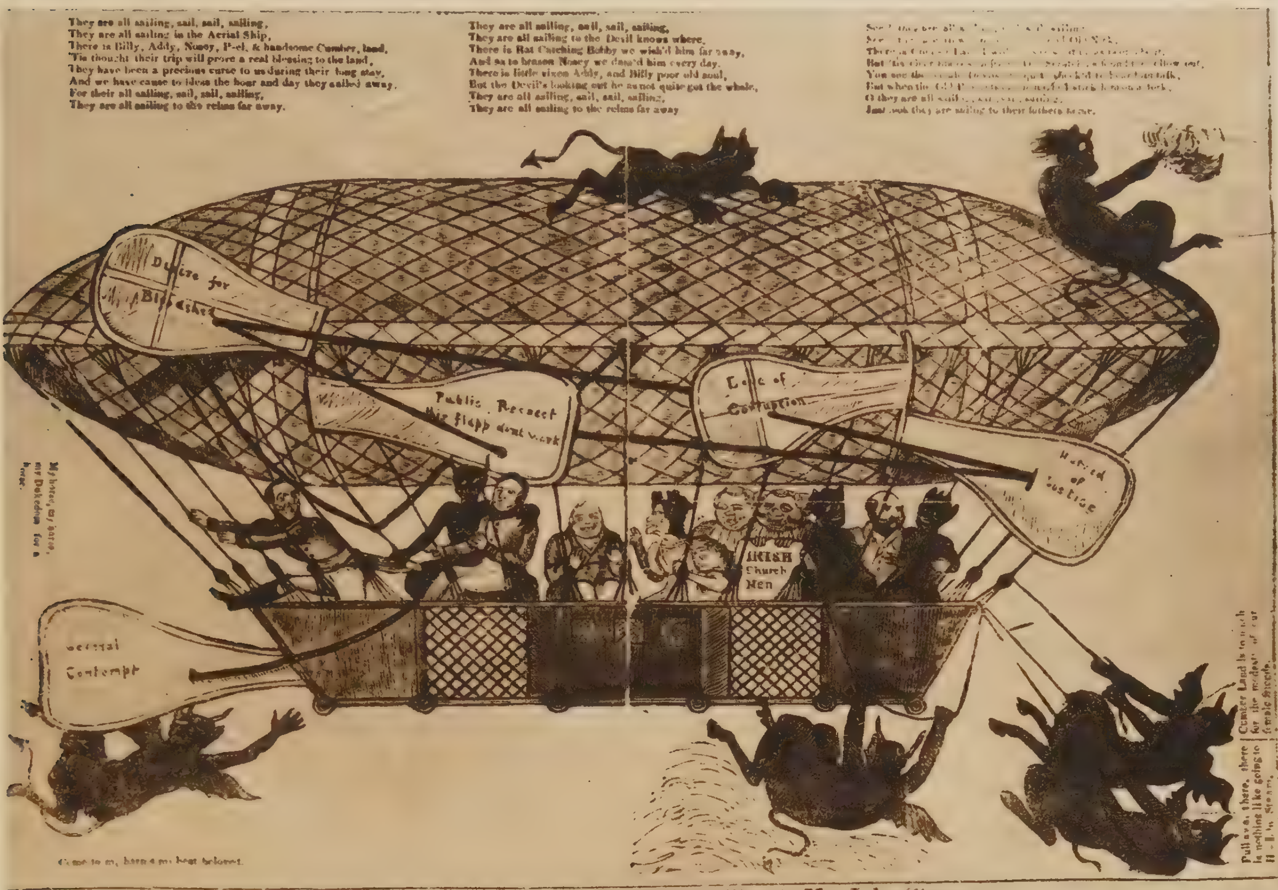
E
An exact representation of the first Aerial Ship THE EAGLE Exhibiting by the Aeronautical Society.

"THE EAGLE"—DIRIGIBLE AIRSHIP OF COMTE DE LENNOX—WHICH INTRIGUED ALL ENGLAND. Contemporary colored print (above) by Ackermann (1835). Comte de Lennox' Airship was caricatured (below) upon the cover of a comic song published in London (1835).


TO THE ÆRIAL SHIP
THE ÆRIAL SHIP STARTS FOR PARIS
FOR PARIS AT 7 COME EARLY

ASSAULTED *with* IRONY *by* LONDON *Caricaturists*—1835



They are all sailing, sail, sail, sailing,
They are all sailing in the Aerial Ship,
There is Billy, Addy, Nosey, P—el, & handsome Cumber, land,
'Tis thought their trip will prove a real blessing to the land,
They have been a precious curse to us during their long stay,
And we have cause to bless the hour and day they sailed away,
For their all sailing, sail, sail, sailing,
They are all sailing to the relms far away.

They are all sailing, sail, sail, sailing,
They are all sailing to the Devil knows where,
There is Rat Catching Bobby we wish'd him far away,
And as to brazen Nosey we damn'd him every day.
There is little vixen Addy, and Billy poor old soul,
But the Devil's looking out he as not quite got the whole,
They are all sailing, sail, sail, sailing,
They are all sailing to the relms far away

[illegible]
O they are all sailing, sail, sail, sailing,
[illegible] they are sailing to their fathers home.

Desire for
Public Respect
His flapp dont work
Love of Corruption
Hatred of Justice
IRISH Church Men
General Contempt
My horse, my horse, my Dukedom for a horse.
Pull away, there, there is nothing like going to H—L by Steam.
Cumber Land is too much for the modesty of our female friends.

First Voyage of the Aerial Ship Sailing to H---L by Steam.

ALL EUROPE was aroused. The "Eagle," a cigar-shaped balloon built by the Comte de Lennox, a French colonel of infantry (1835) seemed destined to become a regular means of communication between London and Paris and other European capitals—and to fly around the world.

The huge affair, 160 feet long 50 feet high and 40 feet wide, was to be navigated by great oars, or paddles, four on a side. All one summer (June, July and August, 1835) this "Leviathan of the Air" was exhibited to curious throngs in the "Dockyard of the European Aeronautical Society" at Kensington, London, doubtless the world's first dirigible hangar.

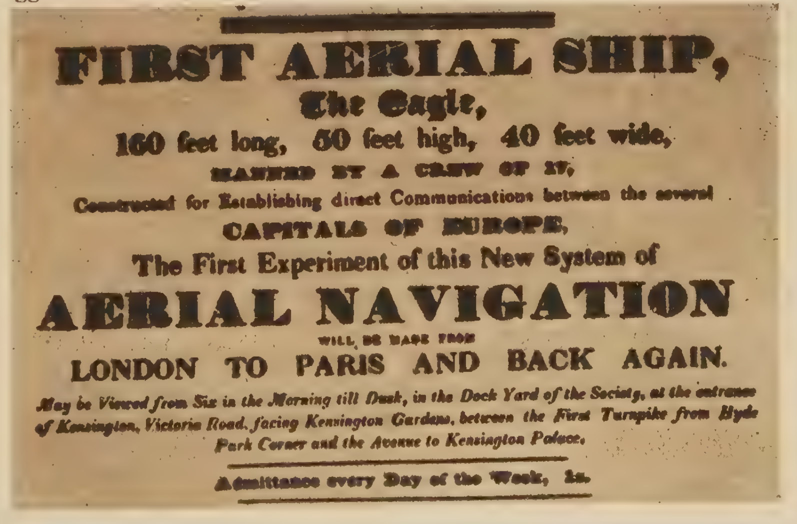
Early in September the "Eagle" was removed to Vauxhall Gardens, where it was announced a "First Ascension" would be made; but in October the exhibition closed and the "Eagle" passed into obscurity—it never sailed. Freely discussed in English newspapers, its promoter was pilloried and later lampooned by caricaturists and gibed at by popular song writers. (Cartoon above in the Harry Guggenheim Collection).

The "European Aeronautical Society" was charged with being another promotion scheme such as Cruikshank cartooned (Page 260)—with a little more apparent substance, and a dirigible to show.

The Comte de Lennox had studied the subject of dirigible balloons for some years, and had built an earlier "L'Aigle" in association with a Dr. Le Berrier of Havre. The attempted ascent of this "Navire Aerien" from the Champ de Mars in Paris (August, 1834) was a complete failure.

Dupuis-Delcourt regarded Lennox as an honorable gentleman whose serious efforts in aerostation were taken advantage of by certain "parasites incapables," and these may have been with him in London.

The handbill (right) was circulated in London (1836) to advertise Lennox' airship.



FIRST AERIAL SHIP,

The Eagle,

160 feet long, 50 feet high, 40 feet wide,

MANNED BY A CREW OF 17,

Constructed for Establishing direct Communications between the several

CAPITALS OF EUROPE.

The First Experiment of this New System of

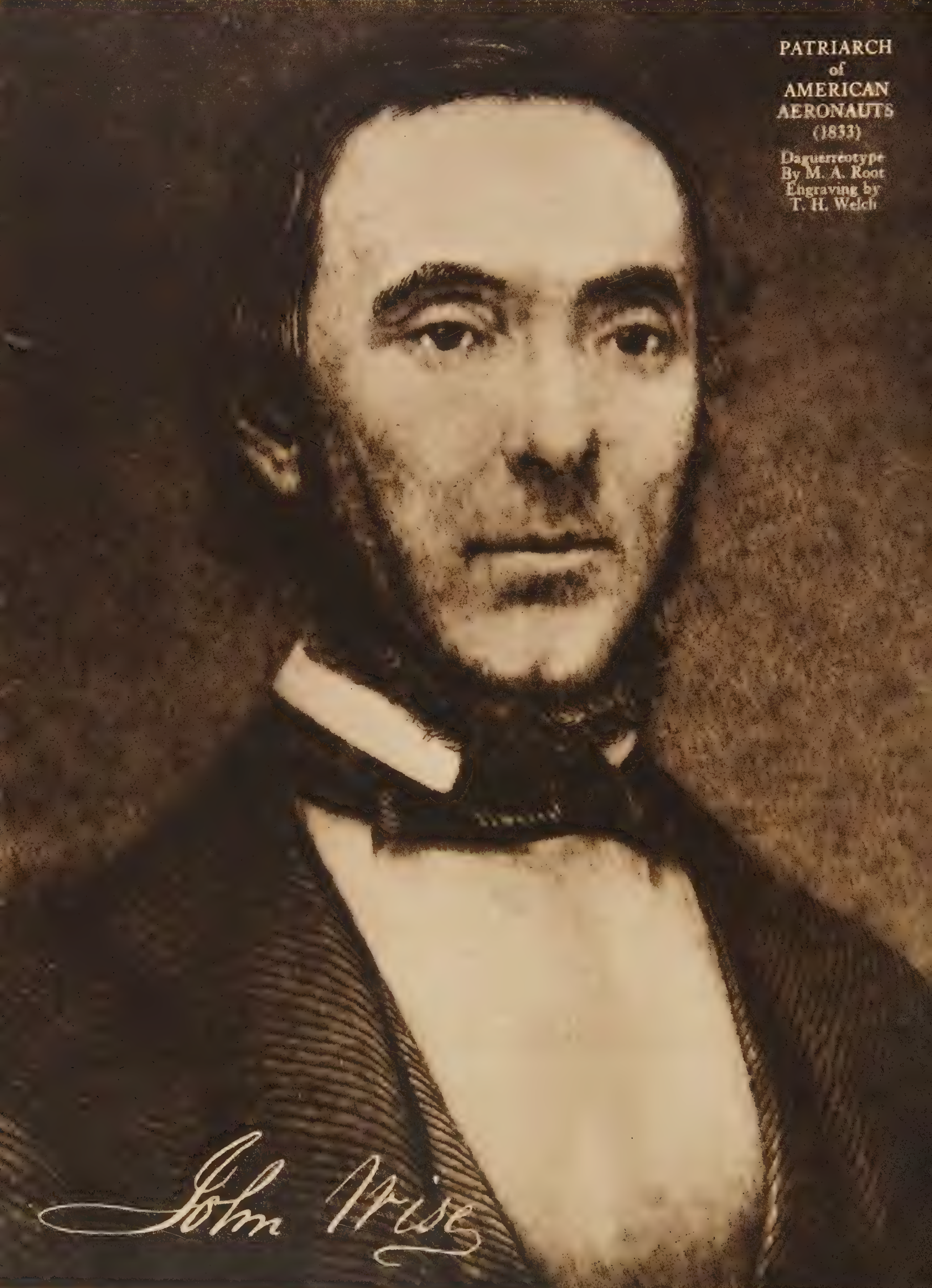
AERIAL NAVIGATION

WILL BE MADE FROM

LONDON TO PARIS AND BACK AGAIN.

May be Viewed from Six in the Morning till Dusk, in the Dock Yard of the Society, at the entrance of Kensington, Victoria Road, facing Kensington Gardens, between the First Turnpike from Hyde Park Corner and the Avenue to Kensington Palace.

Admittance every Day of the Week, 1s.



PATRIARCH
of
AMERICAN
AERONAUTS
(1833)

Daguerreotype
By M. A. Root
Engraving by
T. H. Welch

John Wise

Daring FLIGHTS *Started Over* AMERICAN CONTINENT—1835

JOHN WISE, of Philadelphia, was the "Premier American Aeronaut" for forty years (1835 on) He declared: "*If the speed of mechanical progress keeps pace with the onward march of the human intellect, our children will travel to any part of the globe without inconvenience, smoke, sparks or sea sickness—and at the rate of 100 miles an hour!*"

Wise did more than any other man of his time to make aeronautics known over America. He made 440 balloon ascensions altogether—in scores of cities and towns over the United States—from Bangor, Maine, to St. Louis, Missouri, the western frontier metropolis in his day. He had been ballooning fourteen years when gold was discovered in California and the forty-niners flocked there.

Wise's first ascent was from Ninth and Green Streets, in his home city, Philadelphia, before a throng which "choked the streets for many squares" (May 2, 1835). Prof. J. K. Mitchell, of the University of Pennsylvania, assisted Wise in inflating with hydrogen gas his 28-foot balloon, made by himself of varnished "long cloth" (domestic muslin). Soon the aeronaut adopted oiled silk, but later returned to cambric muslin because holes "burned" in the silk when folded.

DESCENT NEAR PHILADELPHIA.

P.S.Duval's Steam Press

DESCENT NEAR EASTON PENNSYLVANIA.

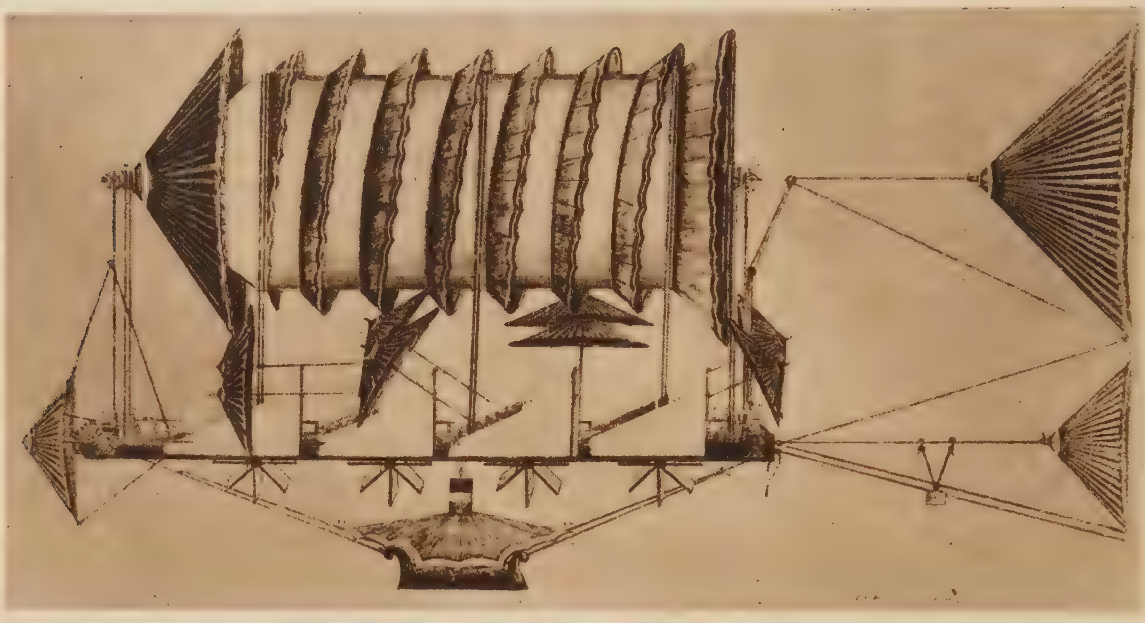
The Indian chiefs, Black Hawk and Keokuk, witnessed a later ascent by Wise (October 1837), and by special permission Keokuk thoroughly investigated everything connected with the aerial carriage, even the megaphone.

"Who do you talk to up there?" asked the Indian chief. "Nobody," replied Wise. "I talk down, not up." Wise did not understand Black Hawk's taciturn aloofness—until the latter grunted there was nothing new in this—he had seen it all before with President Jackson at the Durant ascent in New York (1833).

Wise believed the earth itself a hollow sphere and discussed this with Dr. Joseph Henry, then secretary of the Smithsonian Institution at Washington, whom he took into the clouds in his balloon. During the Mexican War (1846), Wise offered his services to Secretary of War William L. Marcy to head a balloon expedition to bomb the Castle of San Juan de Ulloa, the key to the defences of Vera Cruz. The Government did not accept this offer.

The American aeronaut will appear again in these pages, when he prepares for a "Transatlantic Balloon Voyage" and when he makes a long-distance record which stood for half a century. Wise published two books on aerial history and his own experiences.

Novel Dirigible DESIGNS *in* FRANCE *and* ENGLAND—1835



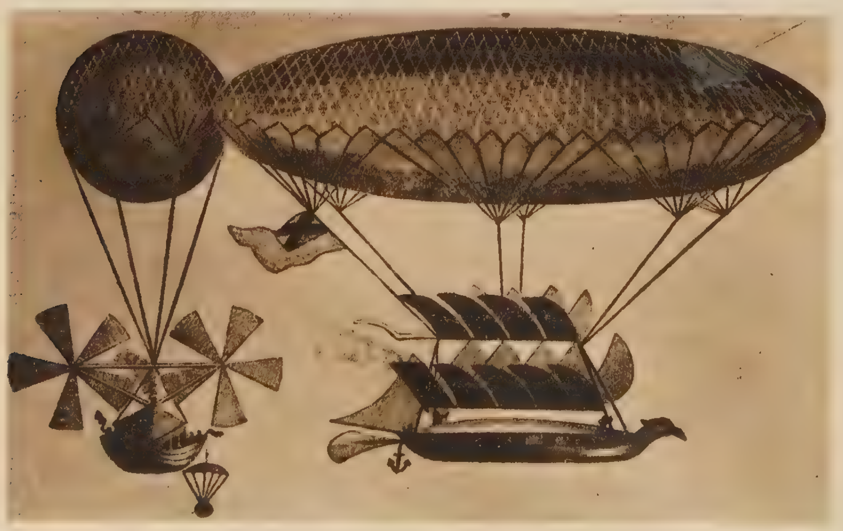
FERRAND'S ROTARY PROPELLER IN FRANCE (Above)—CAYLEY'S DIRIGIBLE (Below)

THIS Amazing Mechanism, (above) is a serious attempt by Pierre Ferrand of Montfermeil, near Paris, to apply to the problem of dirigibility of the balloon the ability to propel it on the rotary principle of the screw propeller. (1835) Ferrand's ingenious mind conceived the idea of utilizing this principle in the balloon itself rather than making use of it in a separate piece of apparatus designed to drive the balloon.

Ferrand's cylindrical airship has a sort of spiral screw surrounding its barrel: the idea was to rotate this and thus force the dirigible through the air. Note also the rotary devices at different angles, with all the appearance of parachutes but which are really much on the order of the horizontal propellers upon which today's helicopters depend. The rudders are rotary affairs and the prow of the aerial ship has a kind of pilot rotor. The design (above) is in the Musee de L'Aeronautique, Chateau Meudon, Paris.

Sir George Cayley (1837), sixty years before anyone succeeded in building a practical dirigible airship, characterizes the air as "an uninterrupted navigable ocean which comes to every man's door. . . . On a great scale balloon floatage offers the most ready, efficient and safe means of aerial navigation. Elongated balloons of large dimensions offer greater facilities for transporting men and goods through the air . . . and when the invention is realized, it will abundantly supply the increasing locomotive wants of mankind." We see his design below.

Cayley made an improved design for a dirigible with propellers driven by a steam engine and a cigar-shaped gas bag inflated with hydrogen (1837). This indicated the progress made by his active mind in its investigations in aerial science. Cayley was first to point out that large size and ample gas capacity were essential to a successful dirigible; he was among the first to recognize the desirability of an envelope divided into several compartments; he first suggested the streamline form; he was a true airship pioneer.

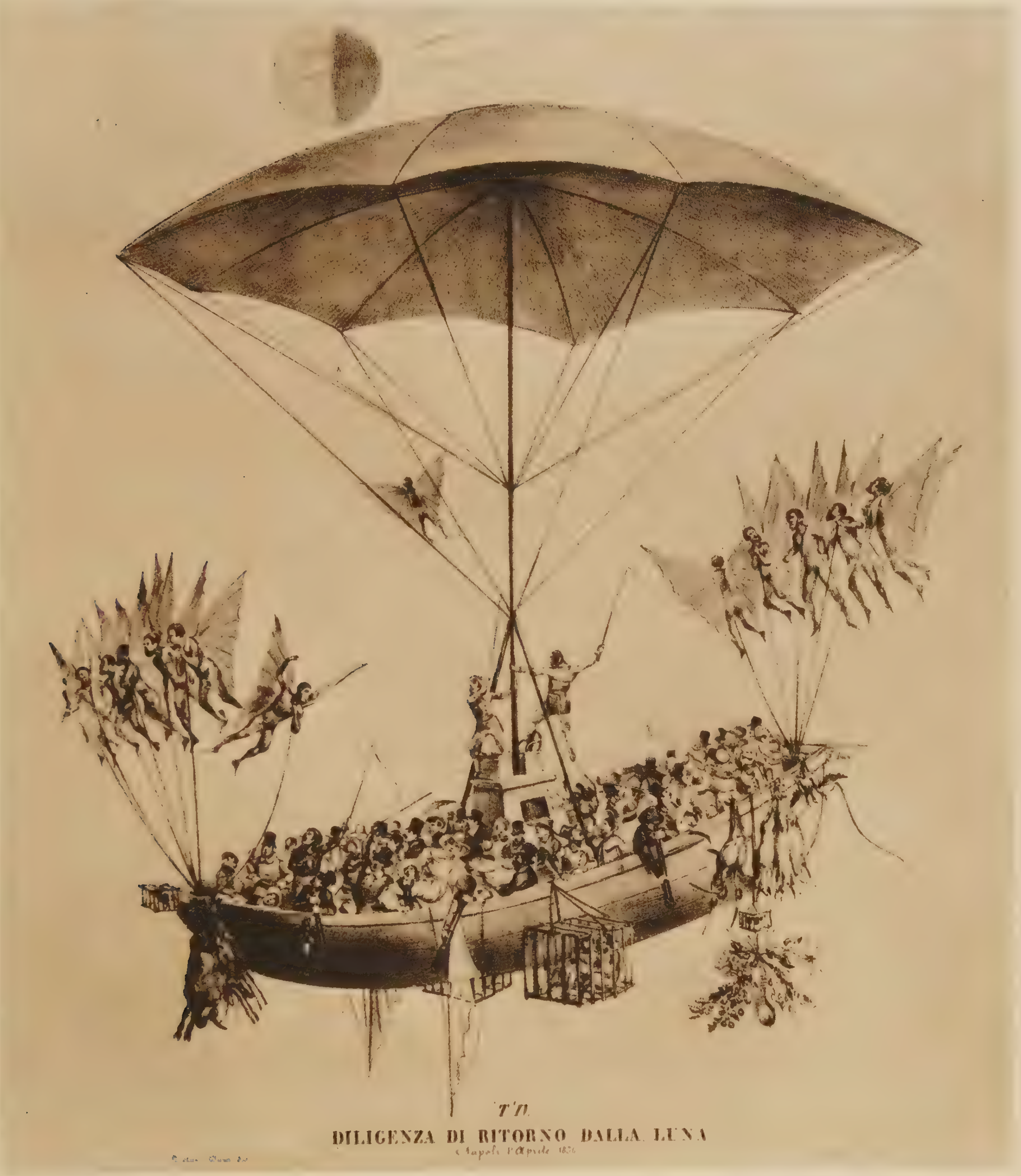


Sir George was first to propose internal bracing of the dirigible structure and a rigid prow. Long years afterward we find men in France and America piloting the first dirigible balloons as merely elongated gas bags with no rigidity to their structure whatever.

Cayley also insisted that the motive power of the airship must be in some sort of car suspended beneath the main balloon, which since has been found the only proper method.

A truly remarkable and far-sighted genius, Sir George Cayley produced the interesting design (left) in connection with writings on the dirigible balloon in the *Mechanics Magazine* (1837). We are to find him designing flying machines a few years later.

Sir John HERSCHEL'S *Scheme for* AERIAL DILIGENCE—1836

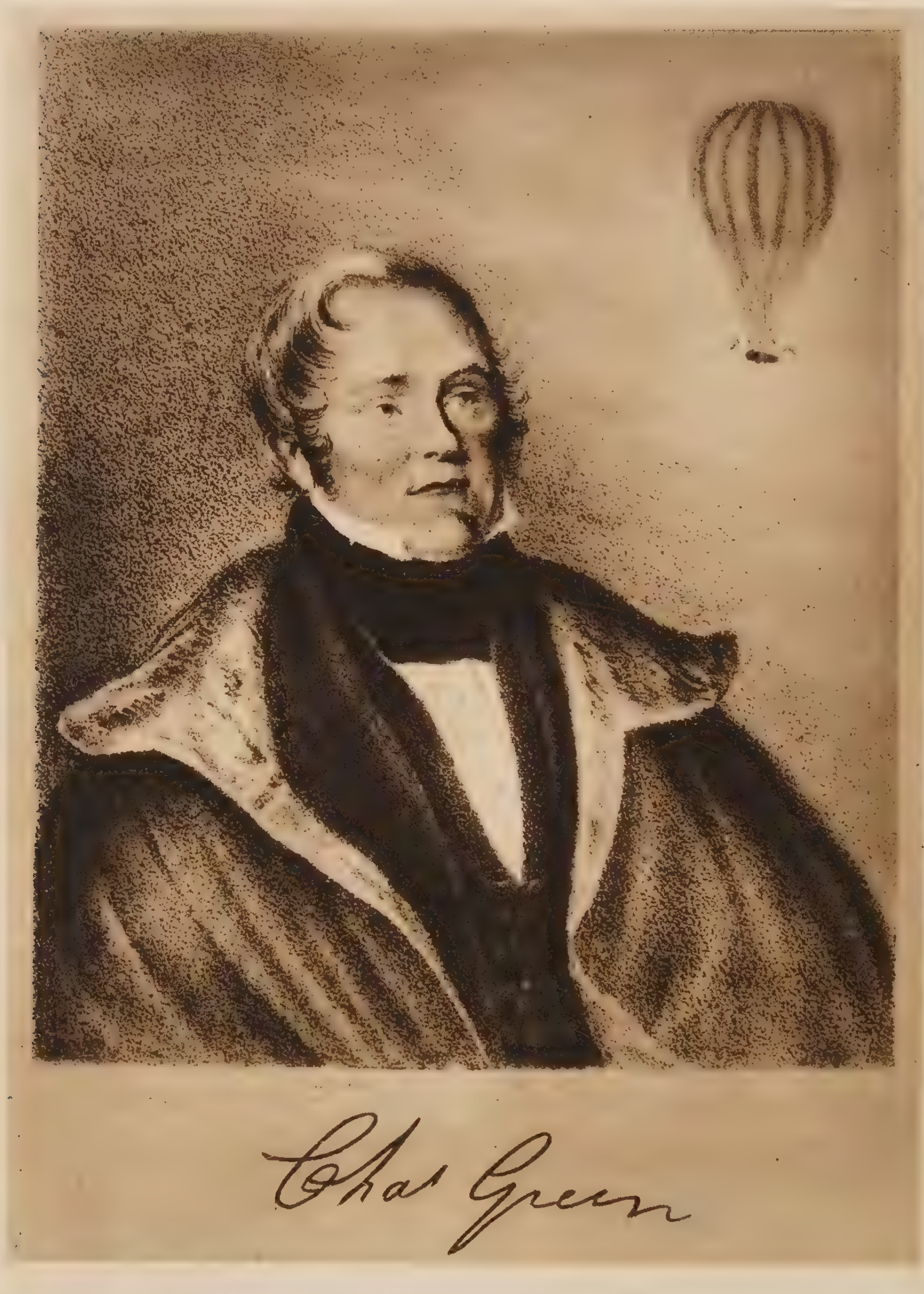

T'D.
DILIGENZA DI RITORNO DALLA LUNA
Napoli 1° Aprile 1836

THE "FLYING DILIGENCE" OF SIR JOHN HERSCHEL RETURNS TO THE MOON

SIR JOHN HERSCHEL (1792-1871), noted English astronomer, possessed a vivid scientific mind which led him to speculate upon the race of men and women which might inhabit a habitable moon.

A set of Italian engravings (Naples 1836), illustrates some of his fancies. This example (above) pictures the return of Sir John's "Aerial Diligence" to the moon with a full passenger list of air travelers. The motive power is furnished by flying men from the moon. They are held to their task by stout taskmasters, clinging to the central mast, with sword and lash. This exhibit is in the Collection of Bella C. Landauer.

GREEN, *of England, Who Made* 500 AERIAL VOYAGES



We have seen the noted English aeronaut Charles Green, in his earlier ascents (1821-1835), during which he introduced many novelties to please the throngs that followed his exhibitions—he dropped small parachutes carrying monkeys or other small animals; he let off fireworks from beneath his balloon car; he had "balloon races" with his brothers, William, Henry or James.

Green fell into the sea and was rescued by a passing packet (off Brighton, 1921) and he was injured more than once. To the day of his death, his remarkable personality commanded respect and won friendship among all classes.

We now come to his most spectacular feat (November 7, 1836)—a balloon voyage with two companions, beginning at midday and lasting until the next forenoon, from London to Weilburg, Germany.

Medals were struck to commemorate this flight.

ENGLISH AERONAUT WHO BECAME THE GREATEST OF HIS TIME

CHARLES GREEN (1785–1870) was the leading English Aerial Navigator for thirty years. He made his first ascent at 36 years of age (1821) and concluded his ballooning career at 67 years (1852) with his 500th ascent.

Green introduced coal gas instead of hydrogen for inflation of balloons; he attained great heights in scientific ascents; he was first to remain in the air all night. Later he piloted the first night balloon flight across the English Channel to Germany. He originated a guide rope "drag" with copper floats with which he hoped to cross the Atlantic by balloon—but never did. Portrait from life in stipple by G. P. Harding; Harry Guggenheim Collection.

SPENCER, *English Solicitor*, *Makes* ASCENTS *with* GREEN

EDWARD SPENCER, a solicitor of Barnsbury, England, was Charles Green's closest friend for years. Green was godfather to Charles Green Spencer, his youngest son. They had been friends in their youth and Spencer, who made some forty ascents as an amateur, was drawn to aerostation through Green.

He was one of twelve passengers in Green's great Vauxhall balloon in its second ascent (September 26, 1836). This balloon was 157 feet in circumference and when inflated, with car attached, stood 80 feet high. It was made of 2,000 yards of crimson and white silk. With hydrogen gas this would have carried 28 people into the sky, but coal gas, which was used by Green, has less lifting power.

The son, Charles Green Spencer, devoted himself to aeronautics after he grew up. He was the founder of a firm which manufactured balloons, parachutes and other aerial paraphernalia in London. He is credited with being the first man to make gliding experiments in England—in a "flying machine" for which he took out a patent. Stipple portrait by G. P. Harding in Guggenheim Collection.

Edward Spencer

CONSULTATION ON EVE OF NIGHT BALLOON FLIGHT FROM ENGLAND TO GERMANY—Left to right, John Hollins, A. R. A.; Walter Prideaux Esq., well known artist; W. M. James, Esq.; Robert Hollond, member of parliament T. Monck Mason, operatic manager; Charles Green, aeronaut. (The last three were the balloon's passengers.) Original painting by John Hollins.

FIRST AIR VOYAGE *Between* ENGLAND *and* GERMANY— 1836

This first voyage from England to Germany was scientifically undertaken largely to test out Charles Green's newly-invented guide rope apparatus which, dragging 2,000 feet on the earth, enabled the air travelers to carry less ballast, use gas more thriftily and automatically ascend to go over mountains in their way.

Green's great new "Vauxhall" was christened "the Nassau" by the daughter of the Baron de Bibra after the great voyage. It was capable of carrying a dozen passengers, which gave the three gentlemen plenty of room for abundant provisions—for a two weeks' journey.

They carried wine, parachutes for dropping communications, fireworks for landing by night, speaking trumpets, a quicklime stove for hot tea and coffee (which Green threw overboard into the Channel), much other paraphernalia and a ton of ballast.

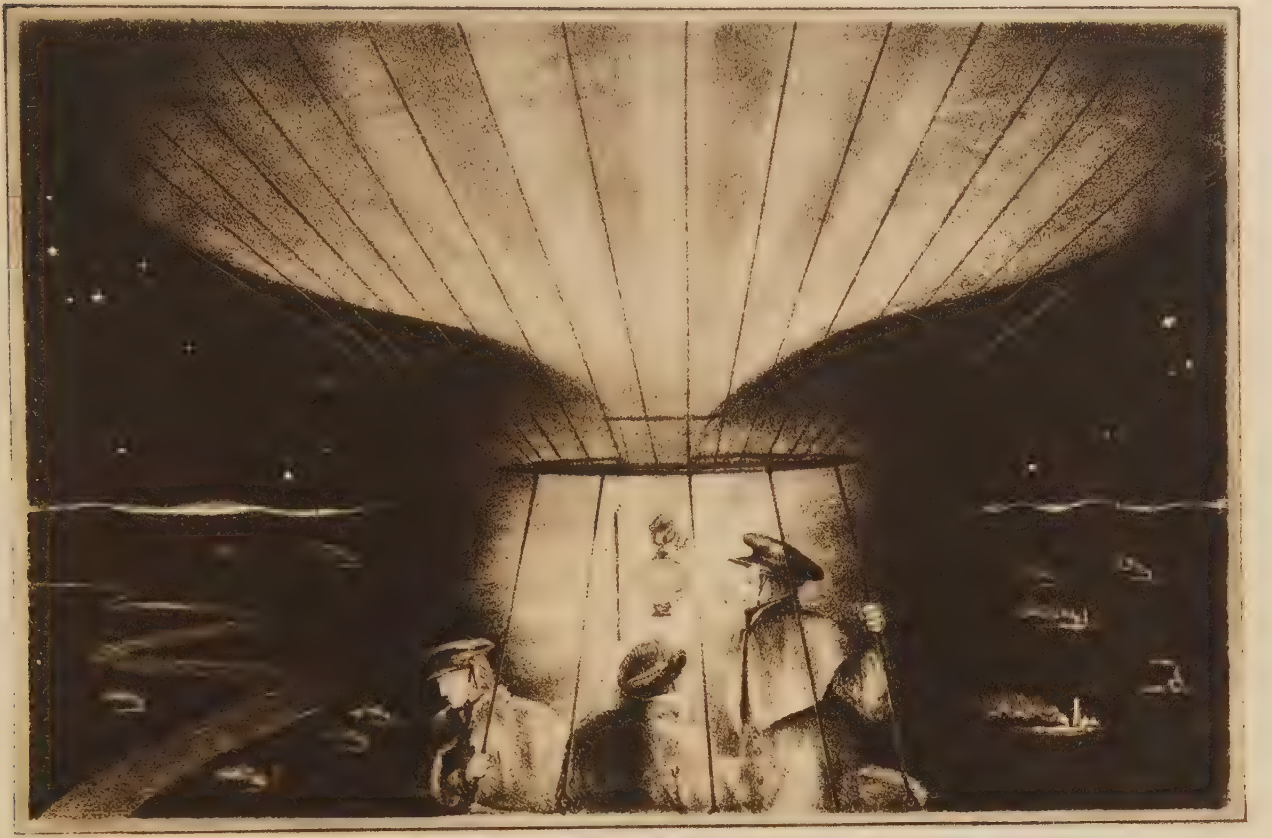
Skillful navigation of the balloon from a great height to lower levels enabled Green to show the party three successive sunrises in the same dawn.

THIS "GREAT NASSAU FLIGHT" of Charles Green, Monck Mason and Robert Hollond (1836), through one night and parts of two days, from London to Weilburg, Germany—480 miles in 18 hours—was the greatest event in aeronautics in the first half of the Nineteenth Century. It attracted the attention of the whole world and established these distinguished British gentlemen in the front rank.

Green piloted the balloon. Hollond, barrister and member of Parliament, suggested and financed the voyage. Monck Mason, operatic manager and air historian, made the third member of the party for pure love of the game. Amply provisioned and equipped, the party set sail, amid cheers of a throng of well wishers, about 1.30 P. M. Monday, November 7 (1836). Immediately after rising, the balloon took a northerly course. Green threw out ballast and they rose to a current which set the balloon in the desired southeasterly direction.

They left the English coastline near Dover Castle about 4.30 and soon their floating guide rope was lowered in the darkness. They seemed "sublimely alone," wrote Monck Mason later, as they "proceeded deeper into the shades of night." They heard the waves on the French shore and soon after were over the lights of Calais. They passed over Ypres, Lille, Brussels, Namur and the countless blazing iron furnaces of Liege and finally crossed the Rhine near Coblentz about six in the morning.

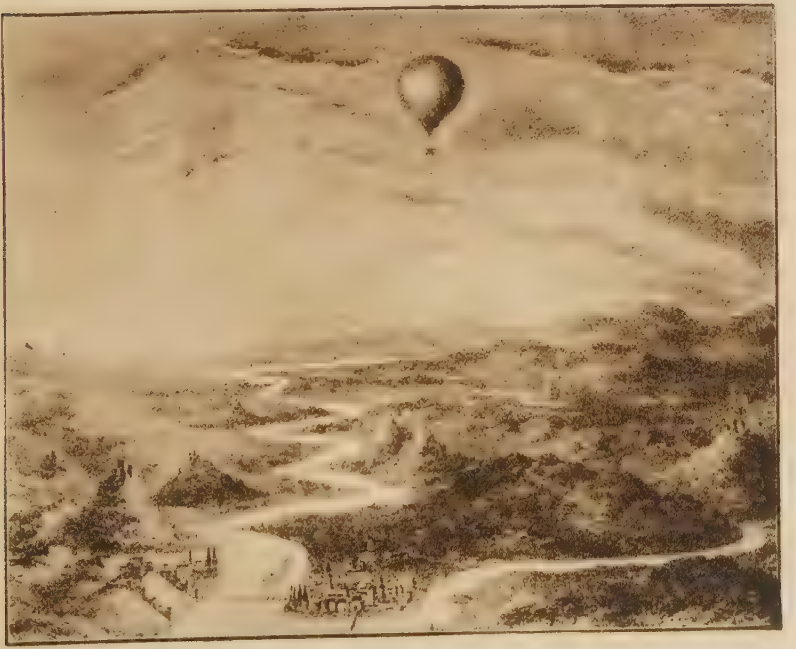
FIRST SKETCHES *Ever Made in the* AIR—*Monck Mason*—1836



NASSAU BALLOON VOYAGERS OVER ENGLISH CHANNEL IN DARK OF NIGHT

SAILING OVER GERMANY, Green's clever handling of the great balloon carried the expedition over the forests to a safe landing about 7.30 A. M. in the valley of Elbern some eight miles from Weilburg, Duchy of Nassau, in Western Germany.

Their record of 480 miles in 18 hours stood for a flight from England for seventy years! Weilburg showed the party such hospitality that Green presented the city two flags carried by him in 221 previous ascents and these were deposited in the ducal palace.

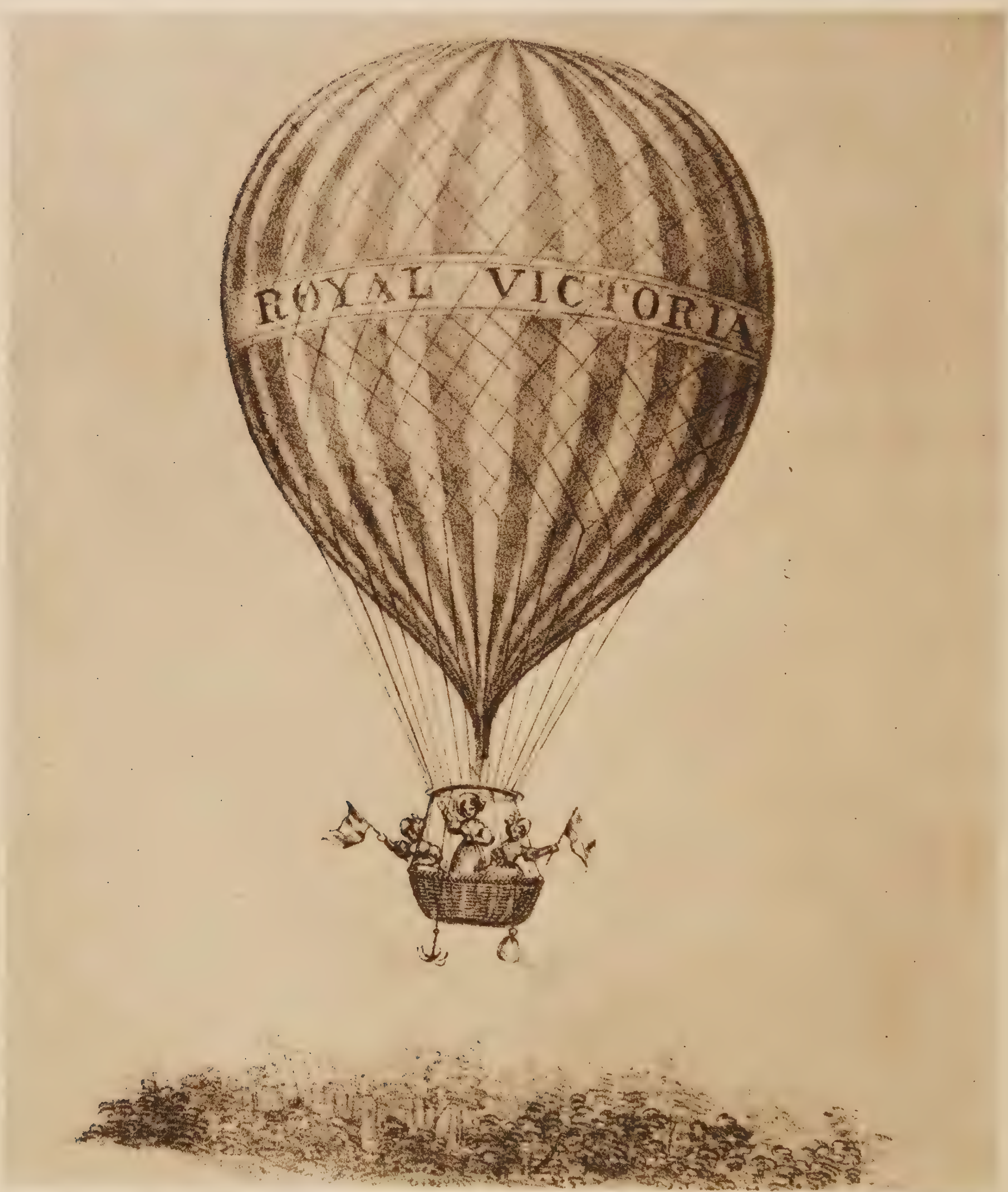


Before bringing the balloon back home after Weilburg, Green took it to Paris, where he made two ascents. On the first of these Gay-Lussac, distinguished French scientist, was a passenger. The exhibit of the "Vauxhall, or Nassau Balloon, over the Midway, England" (on opposite page) is from an original water color in the Collection of J. E. Hodgson, the distinguished aeronautical authority in London.

The sketches (above and below) are originals drawn by Thomas Monck Mason while on the actual voyages. Mason was an Irishman (born 1802) son of W. Monck Mason of Stillorgan, near Dublin. Lessee of Her Majesty's Theater and a "person of some celebrity in the operatic world," he was artist and writer as well.

During the great Voyage from England to Germany Mason made the striking sketches of the air travelers crossing the English Channel by night and the great balloon passing over the Rhine at Coblentz—the first known sketches made in the air. Prints are in the Bella C. Landauer Collection, and in the British Museum.

English LADIES *Ascend in Honor of* QUEEN VICTORIA—1837



FIRST TRIO OF ENGLISHWOMEN TO TOUR THE ATMOSPHERE ABOVE BRITAIN

Mrs. George Graham's new balloon was ready about the time Queen Victoria came to the throne (June 1837) and Mrs. Graham was quick to name her aerial vehicle "Royal Victoria" after England's new ruler.

Mrs. Graham was the first regularly to take other ladies into the air and (August 3, 1837) made the first ascent of this kind with two feminine passengers from Hackney, the occasion being a benefit for the widow of Robert Cooking, who lost his life in a parachute disaster. Old lithograph in the J. E. Hodgson Collection, London.

PART XV

EPOCHAL EVENTS *in the* VICTORIAN AGE

FOUNDATIONS *for* NEW ERA *in a Re-constructed* WORLD

THE VICTORIAN ERA ushers in an age which in the span of a single lifetime is to witness man's triumph over the elements in this age-long conquest. Nations rise and fall, but the indomitable will of man goes on forever. Human progress gathers momentum and sweeps everything before it—an unconquerable force.

Victoria is crowned Queen of England—and the "Royal Victoria" rises over London in her honor (1837); Cocking meets his tragic death in a parachute disaster; and Cayley comes forward with his "solution to aerial navigation," while Hampton is the First Englishman to make a successful descent from a parachute (1838).

The Antarctic Continent is discovered in the same year that Green appears with a project for crossing the Atlantic Ocean in the air (1840). Henson creates a sensation with his Aerial Steam Transit Company (1842), planning to connect the capitals of Europe, Africa and Asia, with steam carriages from London to China in 24 hours, and makes application for a charter before the House of Commons (1843).

Cayley appears with his "Aerial Carriage"; Miller with his "Ornithopter Flying Machine"; and Mason with his model "Flying Machine"—all in the same year that the first telegraph line is opened in the United States between Baltimore and Washington (1843).

Texas is annexed to the United States (1846); war breaks out between the United States and Mexico; Coxwell and Hampton explore the air in England; Gale interests science in his "Newly Invented Aerostatic Machine" (1847).

Louis Philippe is dethroned in France; the Second Republic is set up with Napoleon III as President; with Revolutionary uprisings in many European countries. Gold is discovered in California; while Stringfellow in England makes the first successful flight with a model Flying Machine (1848). Jullien flies his Model Dirigible in Paris and Bell his Locomotive Balloon in England (1850).

Napoleon III is declared Emperor of France; Giffard's "Steam-Driven Dirigible" is flown in Paris; while Green makes his 500th ascent in London during the last days of the Duke of Wellington (1852). The Crimean War breaks out (1853); Japan is opened by Commodore Perry of the United States Navy (1854); Sebastapol falls (1855). The Great Mutiny breaks out in India; and Cayley, "Father of English Aeronautics," dies in England (1857).

The East India Company is dissolved and the Government of India is transferred to the British Crown, while the Atlantic Cable is laid (1858). John Brown's raid on Harper's Ferry to free the slaves arouses America; the first petroleum well is opened in Pennsylvania; War is declared between Austria and Sardinia with the Battle of Magenta and the Battle of Solferino (1859).

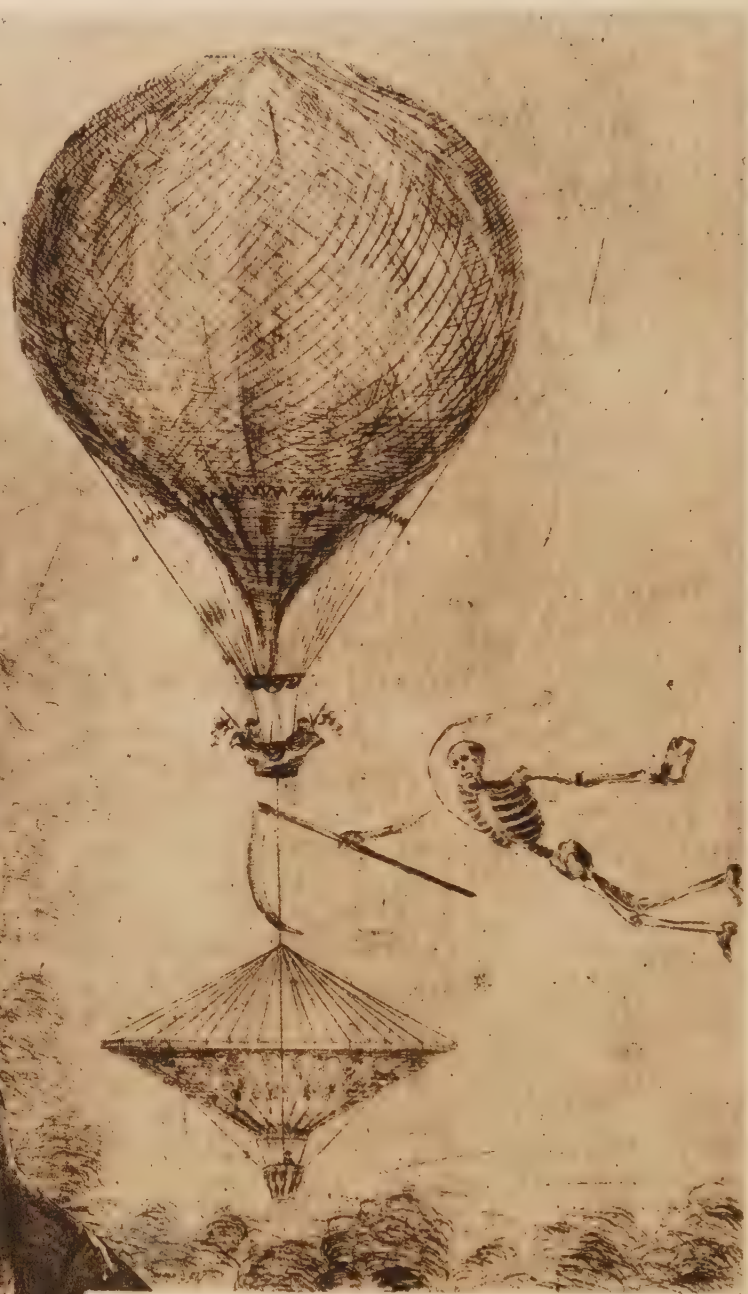
During this period Darwin commands the arena of human thought with Huxley, Herbert Spencer, Tyndall, and John Stuart Mill in England; Balzac, Dumas, Flaubert, Renan and Victor Hugo are figures in France; Henry Clay and Daniel Webster complete their careers, while Douglas, Jefferson Davis, and Abraham Lincoln are coming onto the scene of action in America.

COCKING *Meets Disaster with* "SKELETON *of* DEATH"—1837

ROBERT COCKING (1777–1837), England's first parachutist, shocked the nation with his tragic death in his first attempted parachute descent (July 24, 1837).

He built an original parachute of inverted cone design which he attached to Charles Green's "Royal Nassau Balloon," ascending with Green and Spencer for an early evening ascent from Vauxhall Gardens, London. The parachute was to be freed by a "liberating iron" device operated by the sixty-year-old Cocking himself.

At 5,000 feet he called, "Good night, Spencer! Good night, Green!" And fell to his death. The parachute crumpled in the air and crashed in a field near Lee Green, outside London. Cocking was breathing but did not speak—and expired in a few minutes.



Robert Cocking

Cocking was the son of an Irish clergyman. He was a water color painter by profession. His interest in aeronautics began when he saw Garnerin's first English descent (1802). He lectured on the subject before London societies (1814) and received a medal from the Society of Arts.

His great balloon was a mile up when Cocking dropped. It shot up to about five miles before Green could check it by valving gas. Green and Spencer finally landed in Kent, 28 miles from London, an hour and 20 minutes later.

Cocking's portrait (left) was etched by Louisa Corbeaux from a drawing from life by J. B. Beech. The allegorical etching of the parachute fatality (above) is one of only two impressions extant, in the Norman Collection at the British Patent Office.

ADVENTURES *of* AIRMEN *Hold Interest of* EUROPE—1838

ROBERT COCKING'S death shocked England. He lost his life in an attempt to settle the question of the proper shape for a parachute.

When a young man of 24 years he was one of the thrilled but uneasy spectators of the first parachute descent in England by Andre-Jacques Garnerin (1802). Impressed by the danger of the oscillation and swaying of the Garnerin parachute, he then and there set himself to overcome this—and 35 years later lost his life as he believed he had the problem solved.

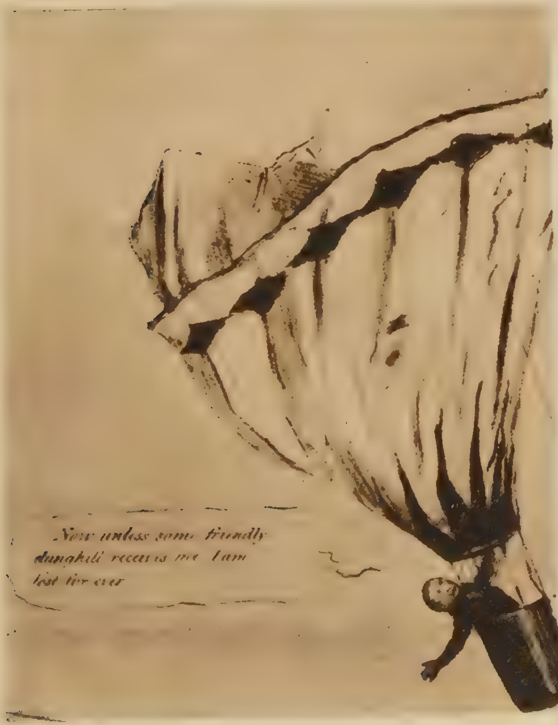
He went so far as to seek Garnerin's acquaintance and they discussed at length whether the umbrella shape or the inverted cone favored by Cocking was the better. Garnerin admitted the violent motion in his descent had made him ill. Watching an umbrella drop to the ground from a height, point downward, with little or no oscillation convinced Cocking that he had the solution. He even fitted the basket of his parachute with inflated bladders as shock absorbers.

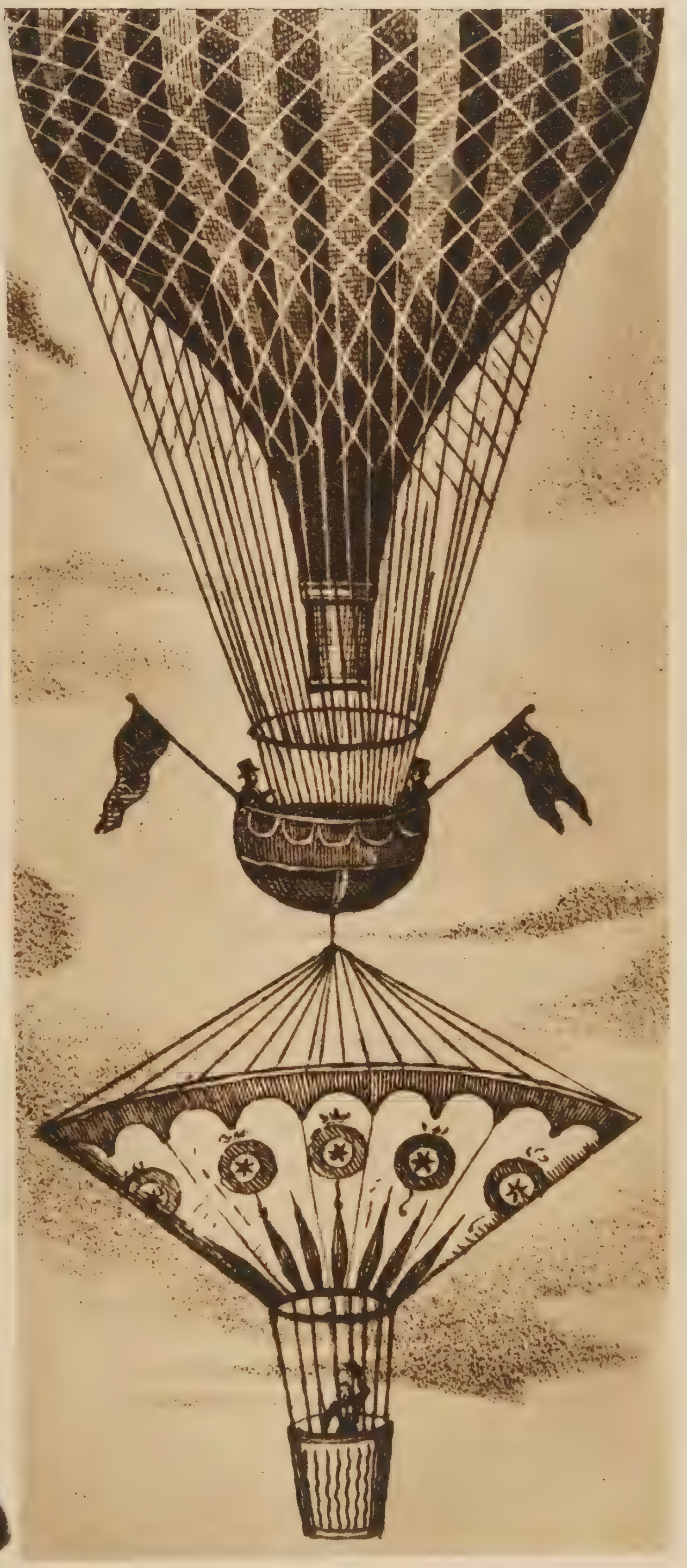
Charles Green insisted on Cocking's taking measures which would permit him to be drawn into the balloon car if necessary, but the latter never thought of using them.

Michael Faraday, noted English scientist whose discoveries in electricity have made posterity indebted to him, paid Cocking a tribute in a letter to the press after the disaster.

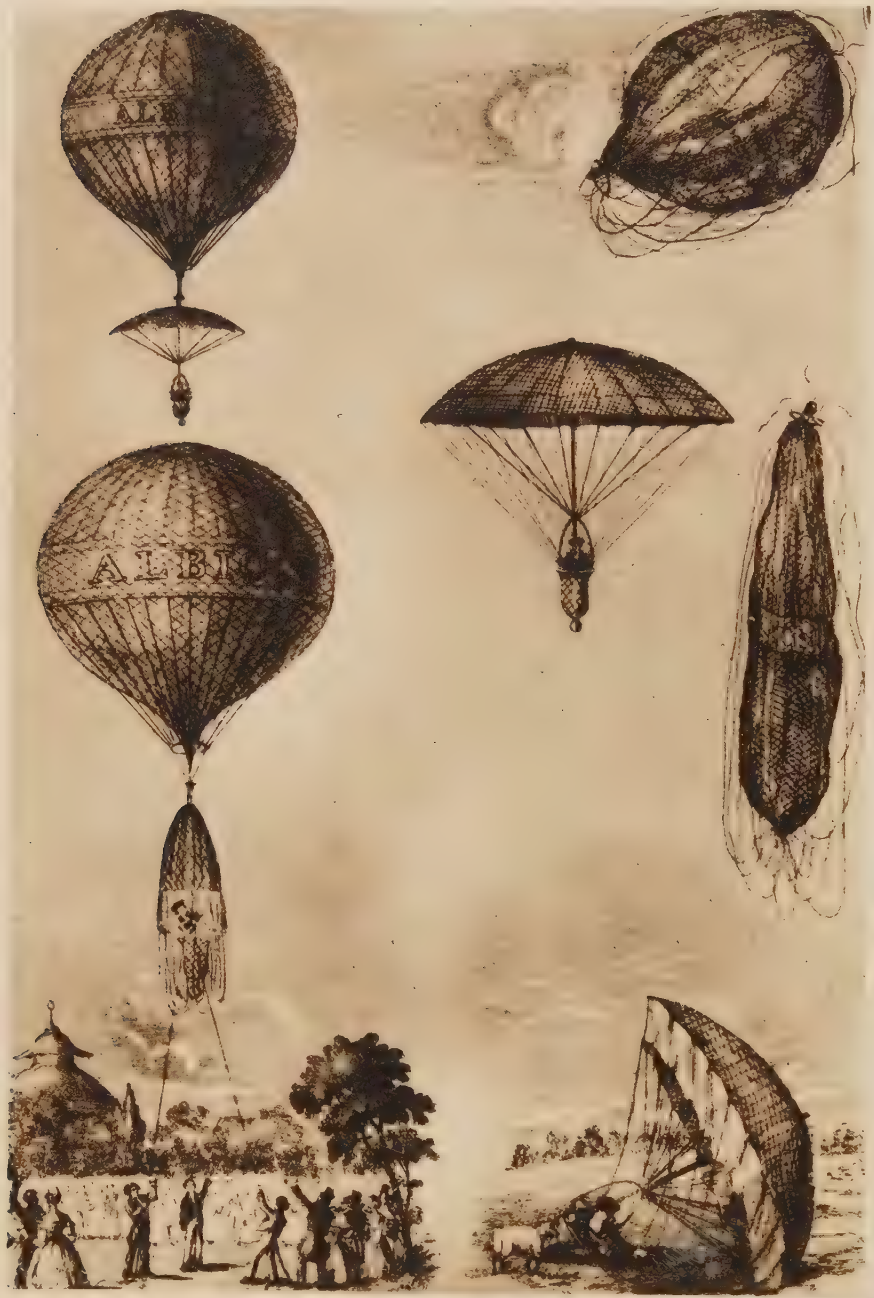
The grimly humorous figurative engraving (below), in the Harry Guggenheim Collection, was published soon after the fatality took place. Old print (right) from the John Wise Collection shows the balloon ascending, with Green and Spencer in the car and Cocking in the parachute.

HISTORIC PRINTS OF COCKING





First ENGLISHMAN *to* DESCEND *from* PARACHUTE—1838



JOHN HAMPTON (born 1799), British Navy man and professional aeronaut, finally came through at Cheltenham, England, with the first successful parachute descent from a balloon by an Englishman (October 3, 1838). He had his own "Albion" balloon and a parachute embodying original ideas. But England had not forgotten the Cocking fatality the year before.

Scientists and influential men sought to dissuade Hampton. The manager of the gas works asked the Cheltenham magistrates to interfere. They viewed Hampton's project with many doubts, but had no power to prohibit it.

Hampton finally agreed to captive ascents only, in order to secure a gas supply—and when his balloon was up some 30 feet, he calmly slashed the ropes, sailed up to 9,000 feet, and cut his parachute free.

It was "an awful moment" when, "with cast-iron nerve," Hampton cast himself loose from the balloon nearly two miles in air. The balloon quickly burst, but the 'chute came down beautifully, in just under 13 minutes, and Hampton landed safely at Badgeworth, about five miles from Cheltenham.

Hampton settled the question of parachutes in England. He used Garnerin's general shape — long since become standard in France —but adopted Cocking's idea of umbrella ribs of thick whalebone; and he had a sort of valance around the outer edge which permitted enlarging or contracting the top.

Suspended from the balloon as it rose, the parachute was folded down—with Hampton in the basket beneath—and the aeronaut raised it when ready to descend. The "stick" of the parachute was a copper tube and the stretchers were of bamboo. The "umbrella" was 15 feet in diameter. The wicker-work basket was strengthened by iron hoops. The whole was fastened to the balloon by a cord through the central tube.

This parachute dropped at a safe speed of about 500 feet per minute, having 30 pounds of ballast to keep it in a straight line.

PORTRAIT OF
JOHN HAMPTON

INVENTORS *Create* NEW DEVICES *to Solve* PROBLEM—1838

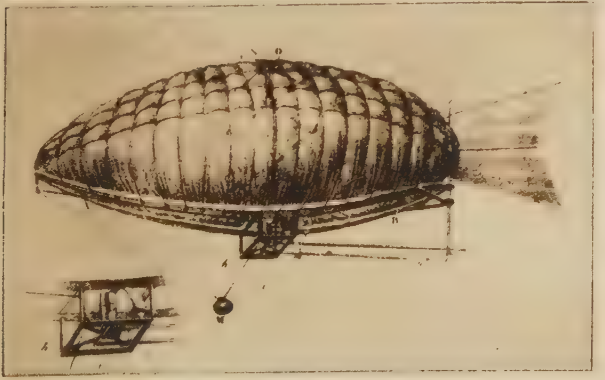
OLD PRINT OF "THE FLYING MAN"
From a sheet of Victorian Letter Paper (1838).

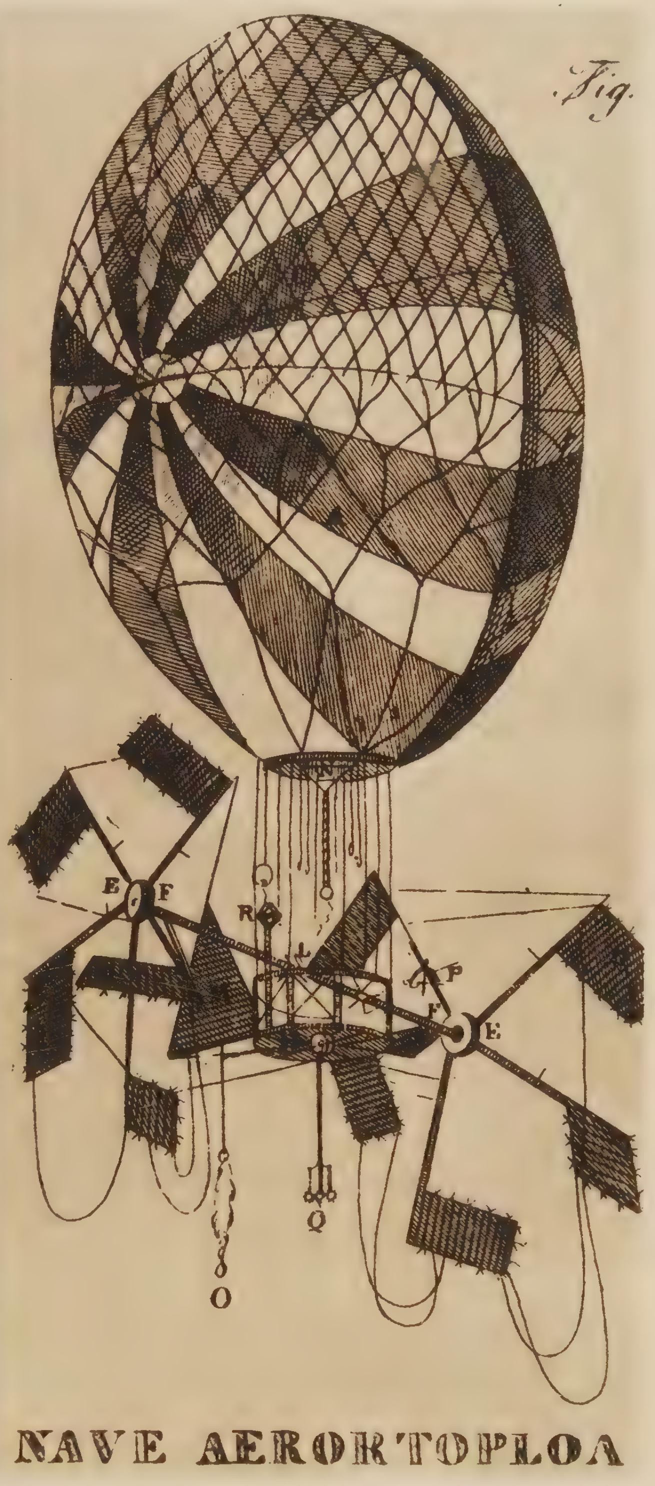
WE are now entering an important year in world science (1838). Muzio Muzzi of Bologna, Italy, brings out his far-famed "Nave Aerortoploa," (right) an airship which to many, even far outside his own country, seemed likely to solve the problem of the dirigible balloon. The first public telegraph line in England opened this year, and the steamship "Great Western" lowered the record for the voyage from England to America to 18 days.

Muzzi, son of Professor Luigi Muzzi of the Papal University in Bologna, originally submitted his unique dirigible design to the learned faculty of that institution (1834), who reported favorably on it, as is recorded in "*Alcuni Documenti sull' Aeronave Rettiremiga Inventata da Muzio Muzzi*" (Florence, 1839). Its fame went around the world. He patented it in Italy, France, England and America. It was deposited in the Collection of Philosophical Machines of His Imperial Highness, the Grand Duke of Tuscany.

The "Nave Aerortoploa" was a hot-air "Montgolfiere," heated with a Davy lamp. The flattened globe had wing-like paddle wheels, to be worked by belts within the car, and a triangular rudder. Muzzi never built this on larger than a model scale. He exhibited this model, however, to a distinguished group of scientists and engineers in New York City, which included John Ericsson, U. S. A.—engineer officer who invented the ironclad "Monitor."

American scientists witnessed a demonstration of the Muzzi dirigible model and pronounced the varied experiments with it "beautiful and satisfactory" (1844).

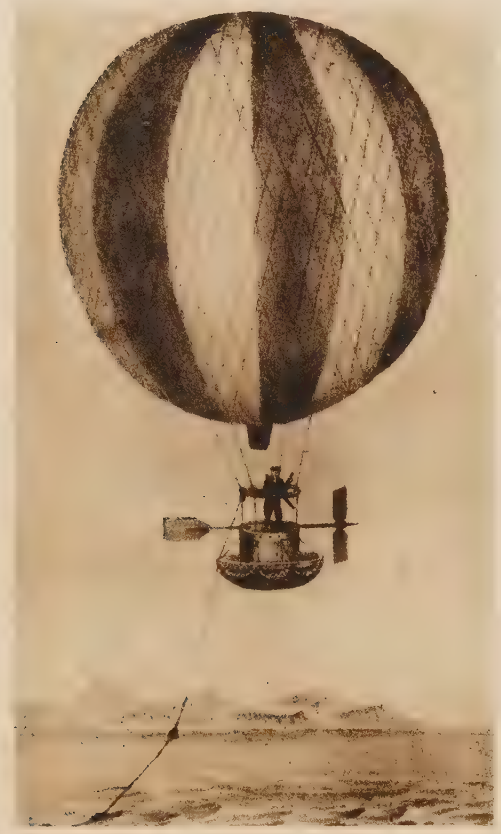




MUZIO MUZZI'S DIRIGIBLE AIRSHIP
Frontispiece (above) is in Muzzi's "Alcuni Documenti" (1839)

DIRIGIBLE (left) is from a print in Bologna, Italy (1838) showing the patent granted to Giovanni Polli of Milan for a "sausage" dirigible in that year.

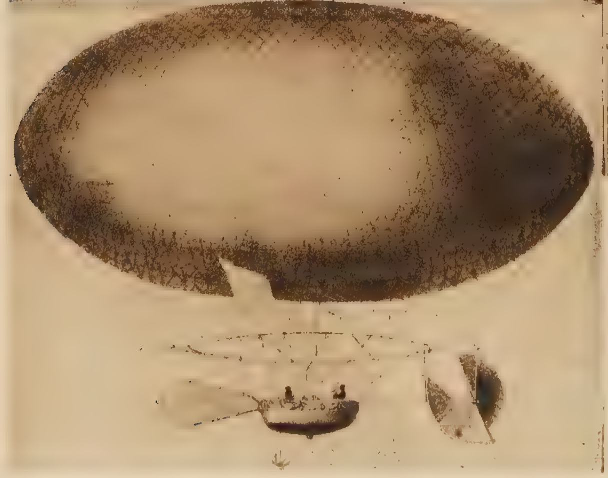
ENGLAND *Proposes to* CROSS ATLANTIC *to* AMERICA—1840

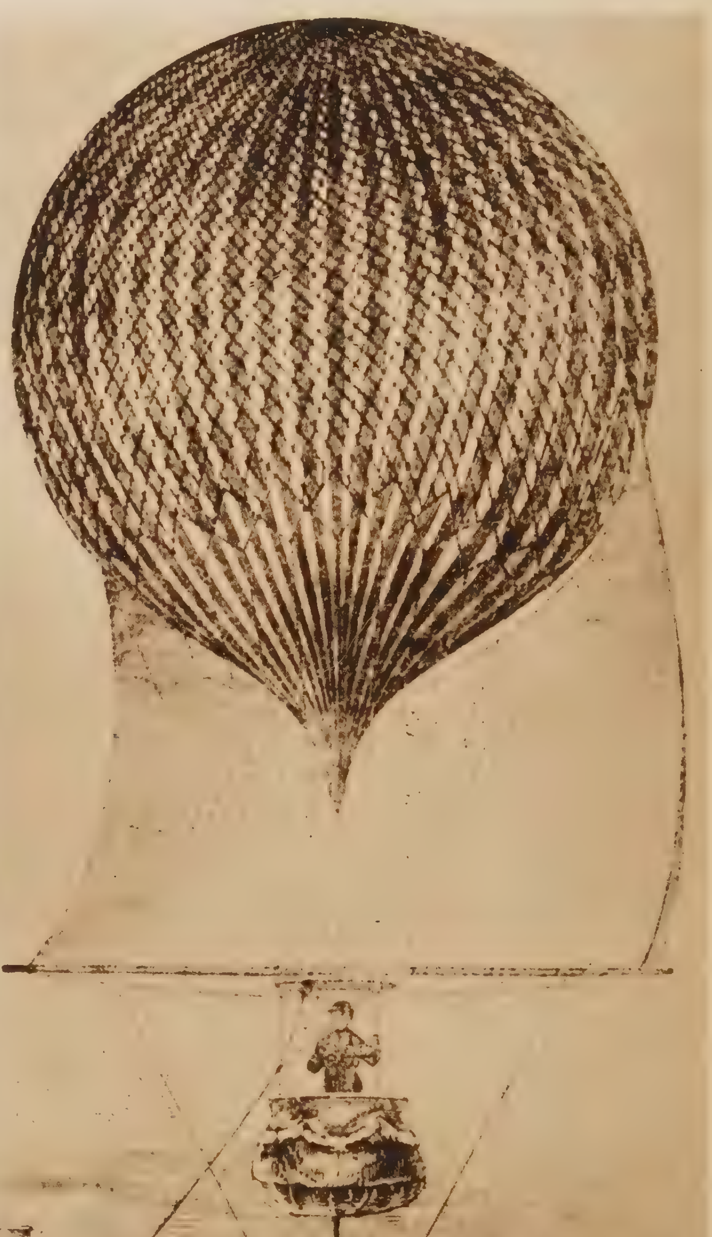


CHARLES GREEN, English aeronaut, of the famous England-to-Germany flight, was the first to seriously plan to cross the Atlantic Ocean in a balloon (1840).

Green fitted his "Great Nassau" with fan propellers, run by clockwork, and a rudder. He believed that with these and his 2,000-foot guide rope (first tried on the Weilburg voyage, 1836), he could steer and direct his course. He asserted that by gaining a certain altitude he would have the advantage of a steady current of air.

Sir Sidney Smith, scientist, offered to accompany Green if he would cross from New York to London. Lithograph (above) in J. E. Hodgson Collection.



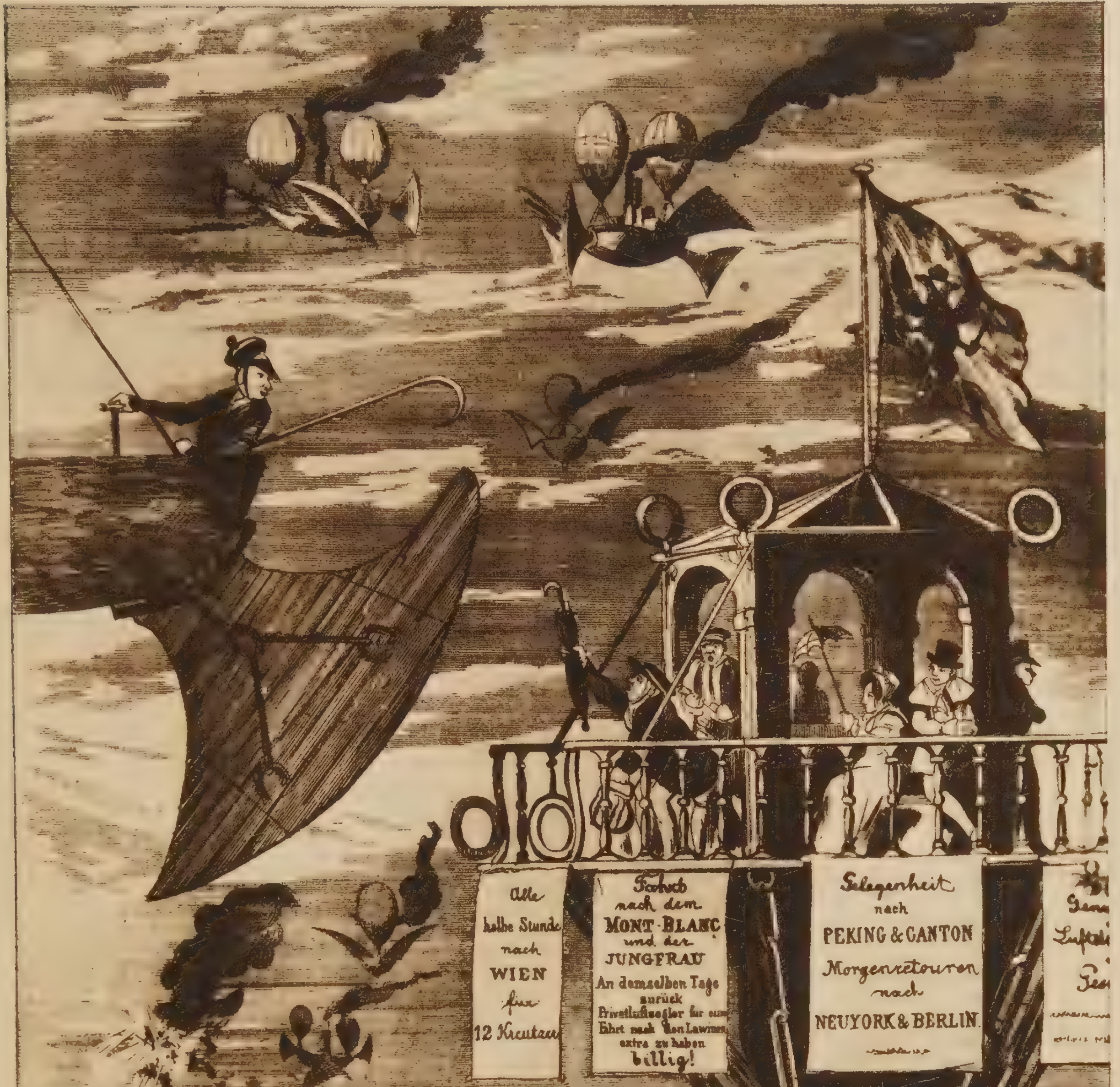


GREEN'S ATLANTIC SAILING BALLOON

Green never made a start on his Transatlantic Balloon Voyage. For three or four years (1840 on) he prepared for it, but eventually went back to ascents at home. He made 200 more ascents before he stopped—500 in all.

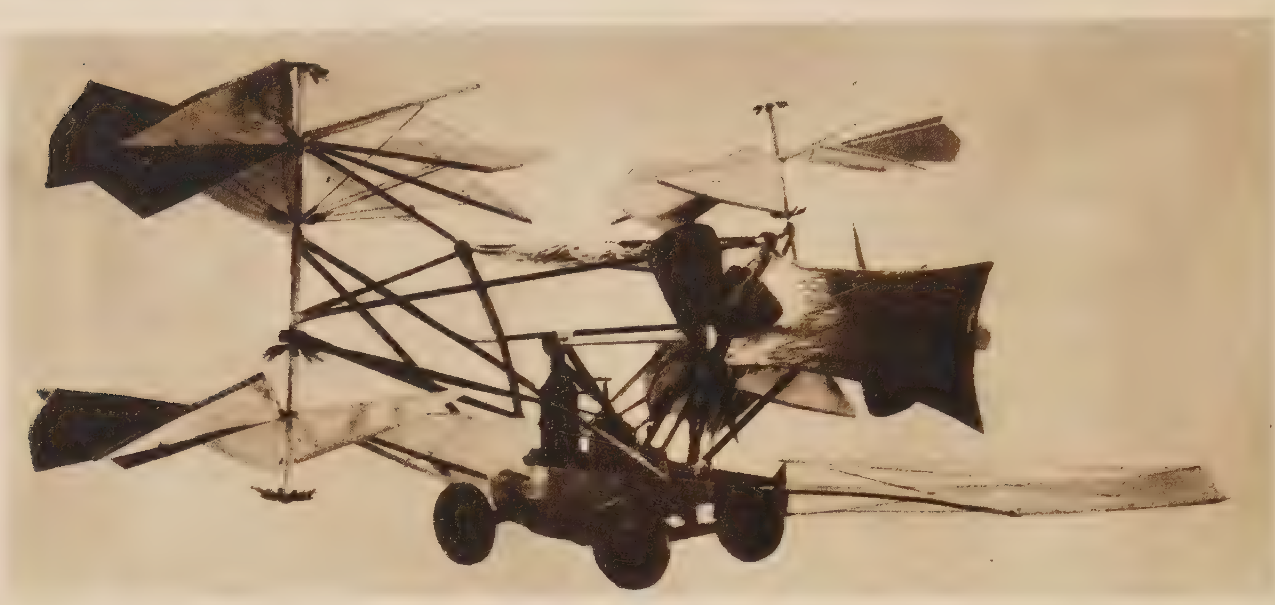
Green declared that he could equip a balloon to remain in the air for three months, but the project was far too daring to meet with much popular sympathy in England. Print of Green's sailing balloon (above) is in the Harry Guggenheim Collection. Dirigible balloon (left) was proposed by Green's fellow aeronaut, Monck Mason (1843) but never built.

CRUIKSHANK *Stirs* ENGLAND *with Famous Cartoons*—1843

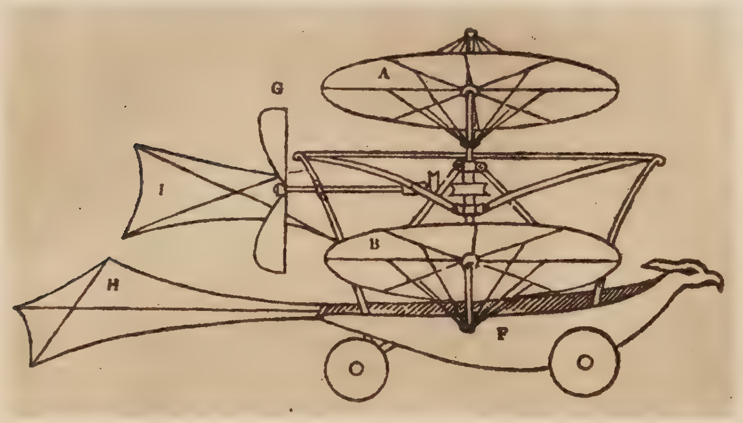


"AIR-UM SCARE-UM TRAVELLING"—This famous cartoon by George Cruikshank appeared in the *Comic Almanac* (1843) accompanied by a rollicking verse which began: "Who's for the excursion 'round the moon? Here's the Original Fly Balloon. . . . The day of railways will be o'er . . . . And steam will be esteem'd no more. . . . When the result is seen. . . . Of the experiment of Mr. Green." Charles Green then proposed to cross the Atlantic by balloon. "Excursions to Mont Blanc," says an announcement on the tower in the cartoon, "to eat Ice Cream—Returning the same day." German version of the Cruikshank cartoon in the Bella C. Landauer Collection.

Steam FLYING MACHINES *by* CAYLEY *and* HENSON—1842



MODEL FROM CAYLEY'S PLANS IN SMITHSONIAN INSTITUTION IN WASHINGTON



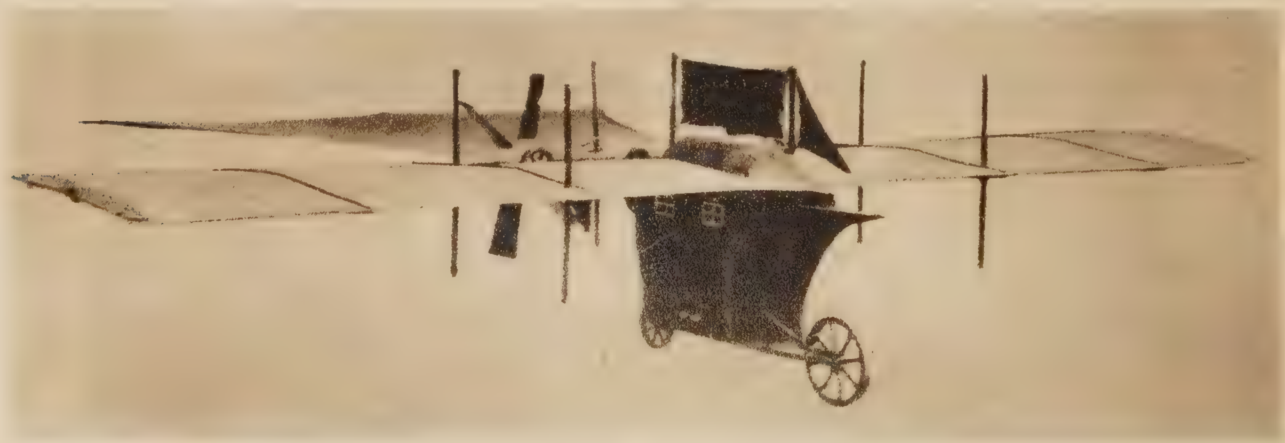
SIR GEORGE CAYLEY'S "AERIAL CARRIAGE"
First Flying Machine design combining airplane and helicopter.

SIR GEORGE CAYLEY, "Father of British Aeronautics," applied a scientific and engineering mind to mechanical flight. We finally find him bringing forward the First "Heavier-than-Air" Flying Machine Design combining the principles of airplane and helicopter—in the *Mechanics' Magazine* (April 1843).

Two circular planes, one above the other, on either side of the machine, provided the lift. Two propellers forced the machine forward. The "framing" (fuselage) was to be covered with canvas to protect the (steam) engine. The machine was equipped with a "broad horizontal rudder, or tail" for ascent or descent and a small vertical rudder for lateral guidance.

Had Cayley, who experimented much with gliders, put his theories to the test mankind might have had a practical flying machine much sooner. The Smithsonian Institution at Washington has proven this with a model built on his plans.

MODEL OF HENSON'S "AERIAL STEAM CARRIAGE"
Exhibit in the Smithsonian Institution in Washington.



AERIAL STEAMSHIP *for Regular Service to* INDIA—1843

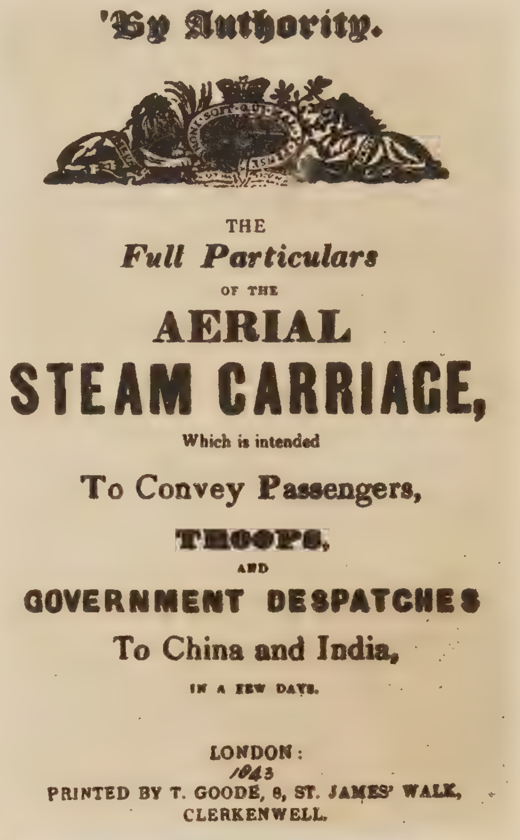
ENGLAND is now to witness "a gigantic enterprise"—the first attempt to organize a world-wide "Aerial Transit Company" for regular schedule "to all countries."

The genius behind this "stupendous project" is William Samuel Henson (born at Leicester, England, 1805), an engineer of parts, the first to propose the monoplane. He believed he could create a Flying Machine that would solve the problem of Aerial Navigation —and came close to doing it on a model scale. Then, after diligent experiments ending mostly in disappointment, Henson exits from aeronautics, marries and emigrates from England to Texas, where we lose sight of him completely.

Henson originated his "Aerial Carriage"—on the monoplane design (and of the "pusher" type) and took out a British patent on a great "Machine for conveying goods, letters, and passengers from place to place through the air" (1842). This had a wing spread of 150 feet over all, a huge tail, vertical and lateral rudders, and two six-bladed propellers with blades 20 feet long in the rear of the cabin fuselage, in which was to be a 25 to 30 horsepower steam-engine to furnish power.

The inventor experimented freely with gliding models and structural devices, completed a lightweight steam engine weighing but 10 pounds for a model airplane one-seventh the size of his great air-liner. This model was operated by a clockwork motor when it flew 60 to 80 feet on Henson's first experiment with it indoors in the Adelaide Gallery, London (1843). It was run down an inclined plane and there were wires beyond to catch it if it fell—and, in truth, it did fall every time. He used the steam engine, and he tried lighter models, returning later to the clockwork.

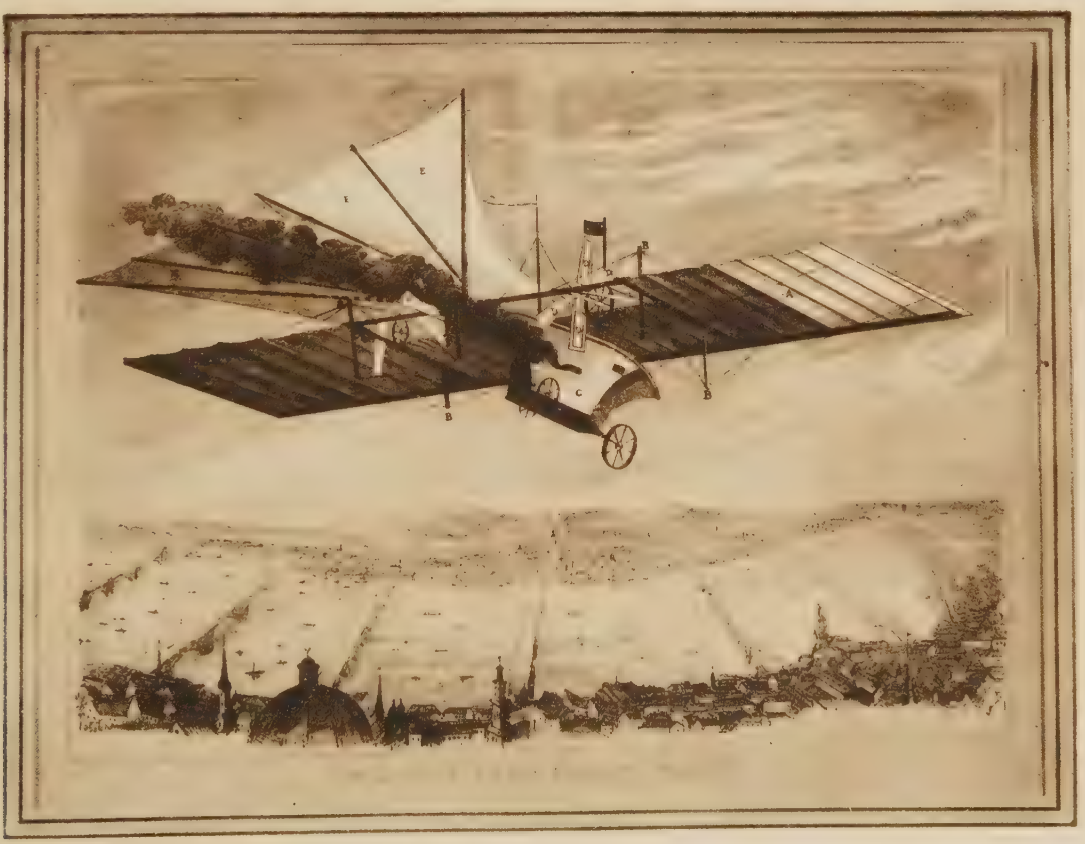
We shall see (Page 297) what happens to Henson when he experiments with his airplane models out-of-doors. Title page (right) is from brochure published (1843) describing Henson's "Aerial Steam Carriage" in the Cuthbert Collection. German print of Henson's "Luft-Dampf-Wagen" (below) is in the Guggenheim Collection.

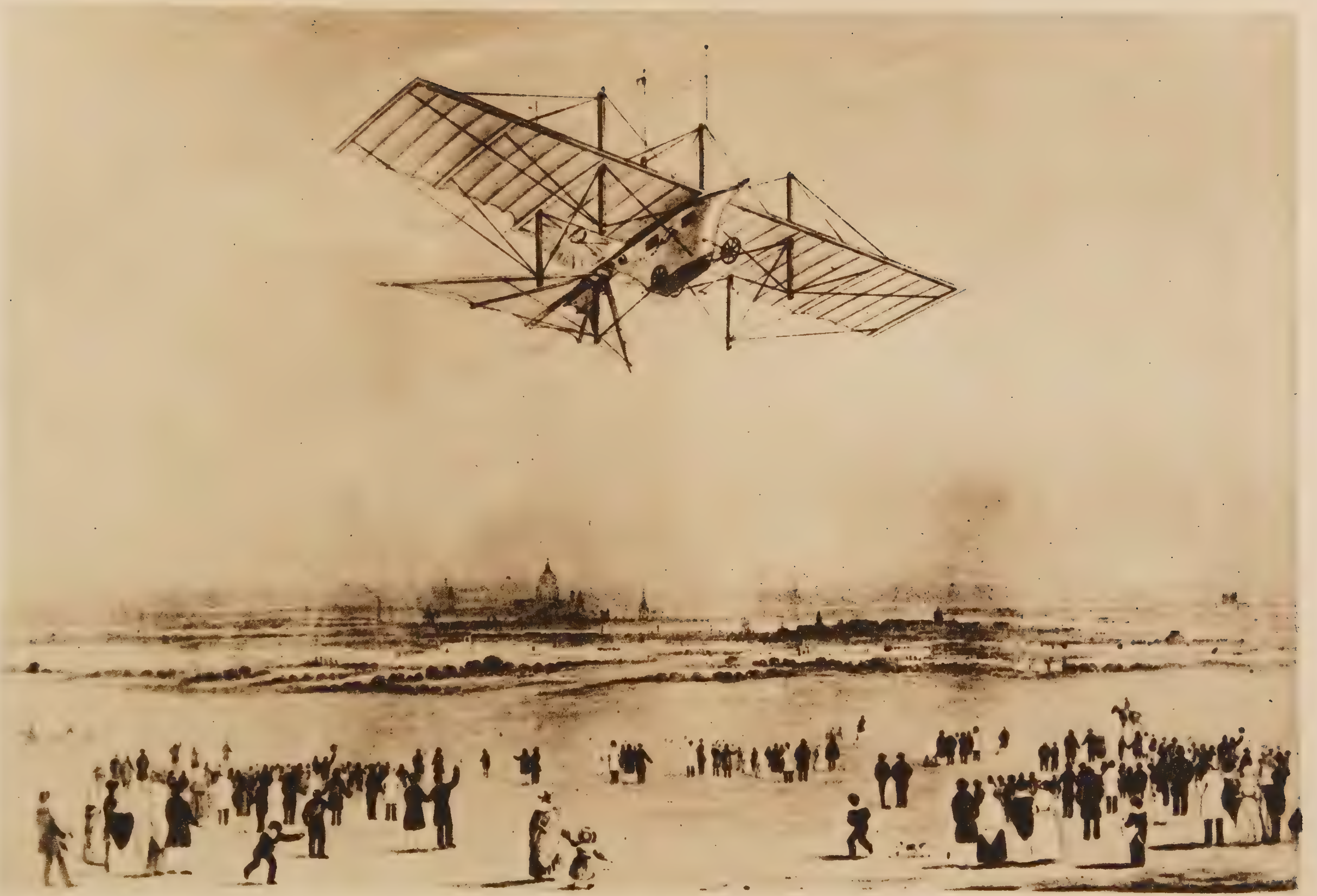


'By Authority.

THE
Full Particulars
OF THE
AERIAL
STEAM CARRIAGE,
Which is intended
To Convey Passengers,
TROOPS,
AND
GOVERNMENT DESPATCHES
To China and India,
IN A FEW DAYS.

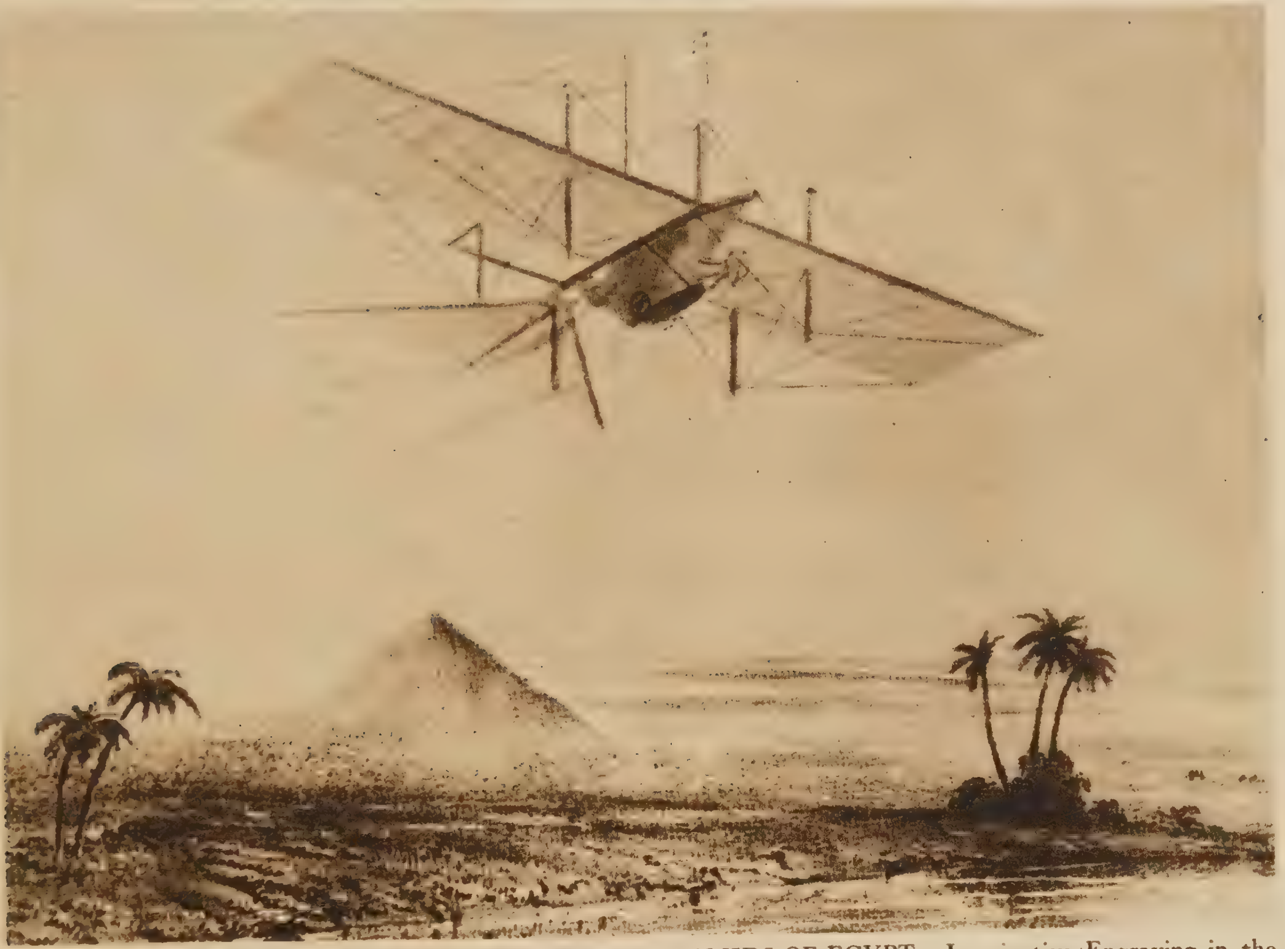
LONDON:
1843
PRINTED BY T. GOODE, 8, ST. JAMES' WALK,
CLERKENWELL.





TO TRAVEL BY AIR TO THE DISTANT PARTS OF THE EARTH—Rare colored aquatint of Henson's "Ariel" over London in Cuthbert Collection.

Inaugurate AIR SERVICE *to* EGYPT, AFRICA, ASIA—1843



HENSON'S "AERIAL STEAM CARRIAGE" OVER PYRAMIDS OF EGYPT—Imaginative Engraving in the Famous Collection of Paul Tissandier in Paris.

THE "AERIAL TRANSIT COMPANY" created a great stir throughout the world. Here was an organized project (1843) for an "Aerial Steam Carriage to Convey Passengers, Troops and Government Despatches to China and India in a Few Days—to Travel from England to China in 24 Hours—and to Distant Parts of the Earth."

Parliament was asked for a small appropriation. But England was not yet out of the throes of industrial revolution and Parliament was too occupied with the Corn Laws to find public funds for such a scheme.

Henson had associated with him John Stringfellow, a fellow engineer who was to establish a secure place in world aeronautics; Frederick Marriott, a journalist, and D. E. Columbine, a London lawyer. A Charter was sought for a company "to work and prove the Patent" (Henson's), which was "so simple in principle and so perfect in all the ingredients required for complete and permanent success" that more or less of the details could not be disclosed until protected by further patents.

Money was not forthcoming. Henson and Stringfellow were obliged to go on spending their own funds. Meantime Henson's experiments had been going forward indoors. He moved outdoors to the Hippodrome Race-course at Bayswater, outside London. Stringfellow lived in Chard in Somerset, South England, where he had a lace factory. Henson proposed that they buy out Marriott and Columbine, which they did. Marriott shortly left for San Francisco and became editor of the *San Francisco News Letter*. We shall meet him years later as the builder of a dirigible. Columbine passes out of the picture.

As owners now of the company based on Henson's "Ariel," they built another spring-driven model and then a large model with a 40-foot wing span with a steam engine, which Stringfellow spent much time in perfecting. This model was not tested till four years later (1847). They had long since returned with it to Chard and they finally tried it out by night on Bala Down. Both had tired of derisive comments by day. Dew on the grass and the moisture in the air caused the silk-covered wings to shrink and warp—otherwise the machine might have flown. But it failed through this untoward circumstance. Henson had had enough. He turned everything over to his friend and soon left England for America.

ENGLAND
TO CHINA
By
STEAM AIR
CARRIAGE
in 24 Hours
(1843)

Henson's "Ariel" was the subject of gibes and ridicule in prose and verse. The best joke of all was Scotch.

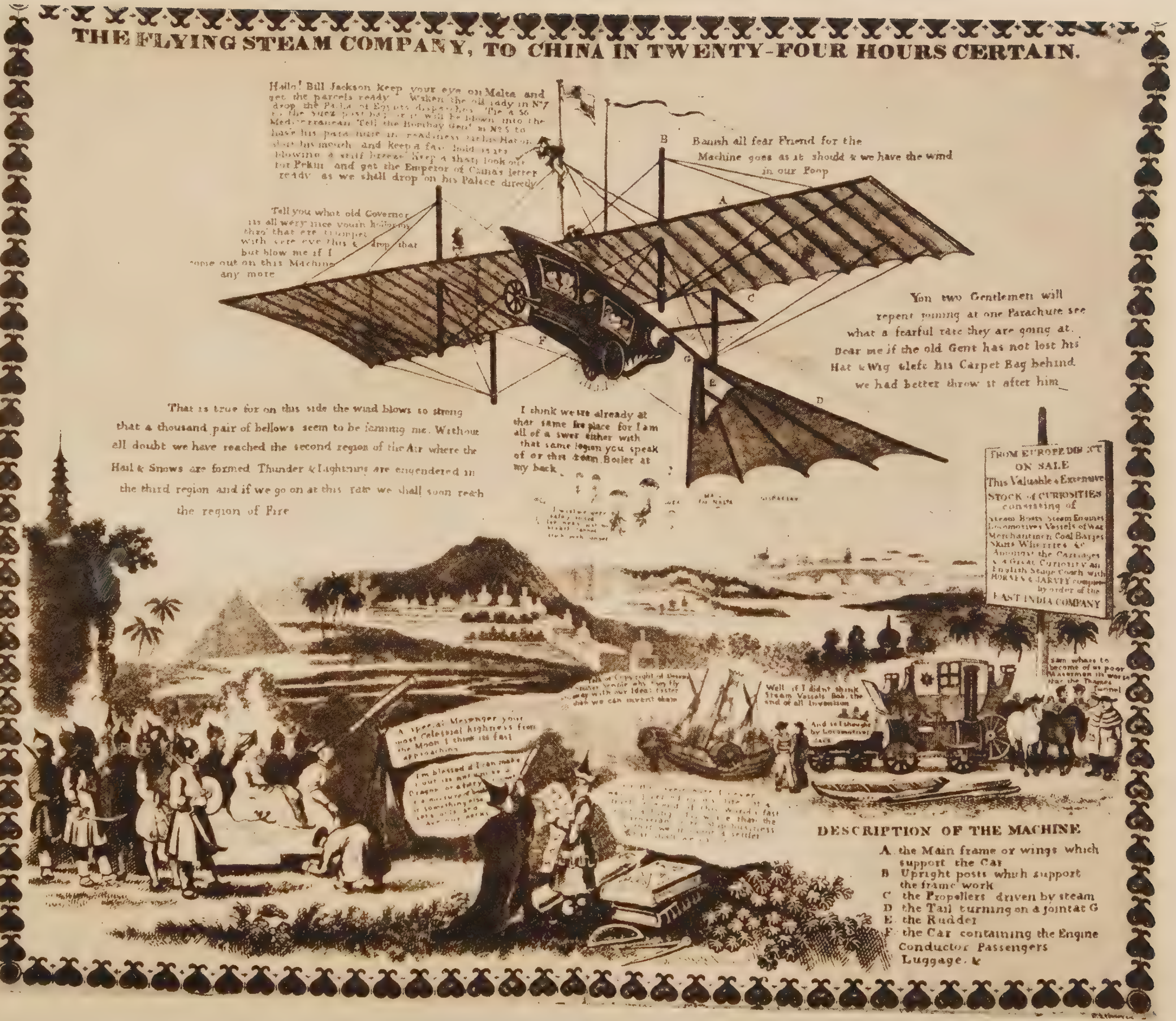
The *Glasgow Constitutional* ran a classic hoax (April 1, 1843) in which a "Professor Geolls" wrote of an "Experimental Trip on an Aerial Machine" (similar to Henson's). This described graphically the start, the flight over Clyde water, the bursting of "three of the steam pipes all at the same instant," and the fall of the air traveler into the river—to be rescued by a passing steamer.

The *London Times* copied this verbatim as a true account of an actual happening.

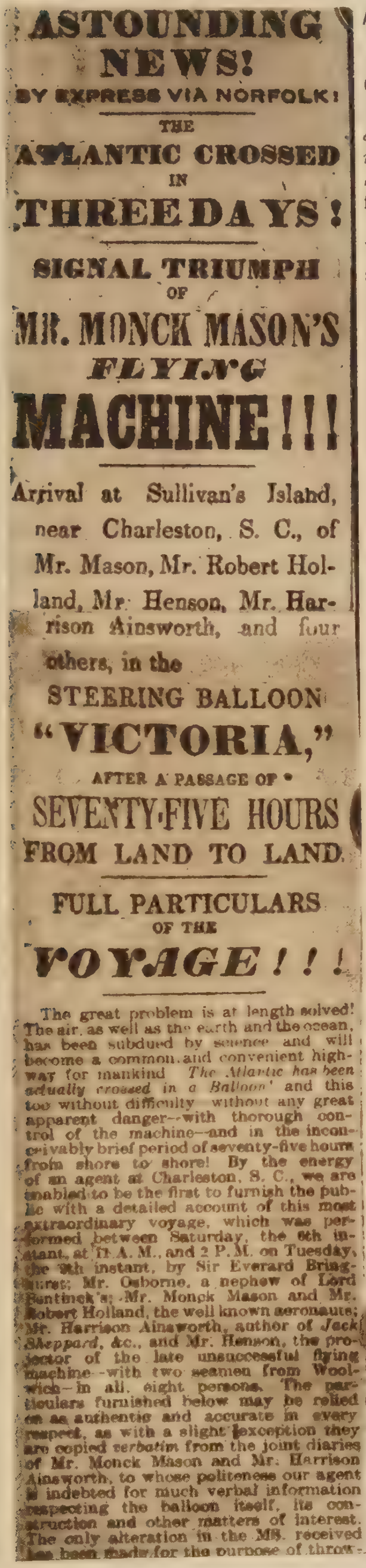
"The Thunderer" even ran an editorial note to the effect that the details were "from the narrative of Professor Geolls himself."

This hoax, like the Rittenhouse-Hopkins Balloon Hoax in Philadelphia (1783), has passed into history as fact and still appears in standard reference works.

This Souvenir Linen Handkerchief (right) of Henson's "Ariel" (1843) in Norman Collection in British Patent office, London.


THE FLYING STEAM COMPANY, TO CHINA IN TWENTY-FOUR HOURS CERTAIN.
Hallo! Bill Jackson keep your eye on Malta and get the parcels ready ... and get the Emperor of China's letter ready as we shall drop on his Palace directly
Tell you what old Governor its all wery nice vourn hollering thro' that ere trumpet ... but blow me if I come out on this Machine any more
Banish all fear Friend for the Machine goes as it should & we have the wind in our Poop
You two Gentlemen will repent joining at one Parachute see what a fearful rate they are going at. Dear me if the old Gent has not lost his Hat & Wig & left his Carpet Bag behind we had better throw it after him
That is true for on this side the wind blows so strong that a thousand pair of bellows seem to be fanning me. Without all doubt we have reached the second region of the Air where the Hail & Snows are formed Thunder & Lightning are engendered in the third region and if we go on at this rate we shall soon reach the region of Fire
I think we are already at that same fire place for I am all of a swet either with that same region you speak of or this steam Boiler at my back
A
B
C
D
E
F
G
FROM EUROPE DIRECT
ON SALE
This Valuable & Extensive
STOCK of CURIOSITIES
consisting of
Steam Boats Steam Engines Locomotives Vessels of War Merchantmen Coal Barges Skiffs Wherries &c
Amongst the Carriages a Great Curiosity an English Stage Coach with Horses & Jarvey complete
by order of the
EAST INDIA COMPANY
A special Messenger your most Celestial highness from the Moon I think its fast approaching
Well if I didn't think Steam Vessels was the end of all Invention
DESCRIPTION OF THE MACHINE
A. the Main frame or wings which support the Car
B Upright posts which support the frame work
C the Propellers driven by steam
D the Tail turning on a joint at G
E. the Rudder
F the Car containing the Engine Conductor Passengers Luggage. &

EDGAR ALLAN POE'S *Great* HOAX "*Astounds*" *America*—1844



ASTOUNDING NEWS!

BY EXPRESS VIA NORFOLK!

THE ATLANTIC CROSSED IN THREE DAYS!

SIGNAL TRIUMPH OF MR. MONCK MASON'S *FLYING* MACHINE!!!

Arrival at Sullivan's Island, near Charleston, S. C., of Mr. Mason, Mr. Robert Holland, Mr. Henson, Mr. Harrison Ainsworth, and four others, in the

STEERING BALLOON "VICTORIA,"

AFTER A PASSAGE OF

SEVENTY-FIVE HOURS FROM LAND TO LAND.

FULL PARTICULARS OF THE *VOYAGE!!!*

The great problem is at length solved! The air, as well as the earth and the ocean, has been subdued by science and will become a common and convenient highway for mankind. *The Atlantic has been actually crossed in a Balloon!* and this too without difficulty—without any great apparent danger—with thorough control of the machine—and in the inconceivably brief period of seventy-five hours from shore to shore! By the energy of an agent at Charleston, S. C., we are enabled to be the first to furnish the public with a detailed account of this most extraordinary voyage, which was performed between Saturday, the 6th instant, at 11 A. M., and 2 P. M. on Tuesday, the 9th instant, by Sir Everard Bringhurst; Mr. Osborne, a nephew of Lord Bentinck's; Mr. Monck Mason and Mr. Robert Holland, the well known aeronauts; Mr. Harrison Ainsworth, author of *Jack Sheppard*, &c., and Mr. Henson, the projector of the late unsuccessful flying machine—with two seamen from Woolwich—in all, eight persons. The particulars furnished below may be relied on as authentic and accurate in every respect, as with a slight exception they are copied *verbatim* from the joint diaries of Mr. Monck Mason and Mr. Harrison Ainsworth, to whose politeness our agent is indebted for much verbal information respecting the balloon itself, its construction and other matters of interest. The only alteration in the MS. received has been made for the purpose of throw-

THE Greatest Air Hoax ever known in America was perpetrated by Edgar Allen Poe (1844).

Poe wrote an amazing story of the aerial crossing of the Atlantic Ocean in three days—and the New York Sun printed it as a news fact. (See facsimile left).

Astounding News! From North Wales to Charleston, S. C., in seventy-five hours—by a party made up of "Sir Everard Bringhurst; Mr. Osborne, nephew of Lord Bentinck; Mr. Monck Mason and Mr. Robert Hollond; Mr. Harrison Ainsworth and Mr. Henson, with two seamen from Woolwich" in "Monck Mason's Flying Machine" (between Saturday, April 6, and Tuesday, April 9, 1844).

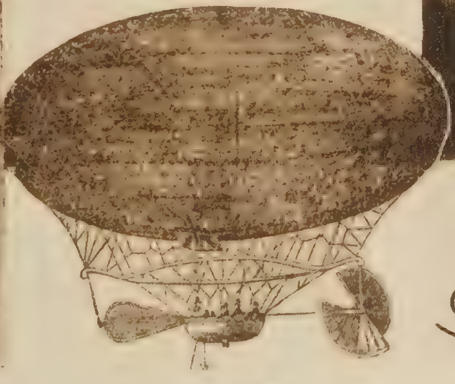
The "scientifically correct" account of their air journey even contained the purported joint dairy of Messrs. Mason and Ainsworth. It covered an entire page in an Extra of the *New York Sun*, then a morning paper, (Saturday, April 13, 1844) and quickly spread over the country.

The entire tale was a magnificent fabrication.

The *Sun* reported (Monday, April 15): "The mails from the South last Saturday night not having brought confirmation of the arrival of the balloon from England, we are inclined to believe the intelligence is erroneous."

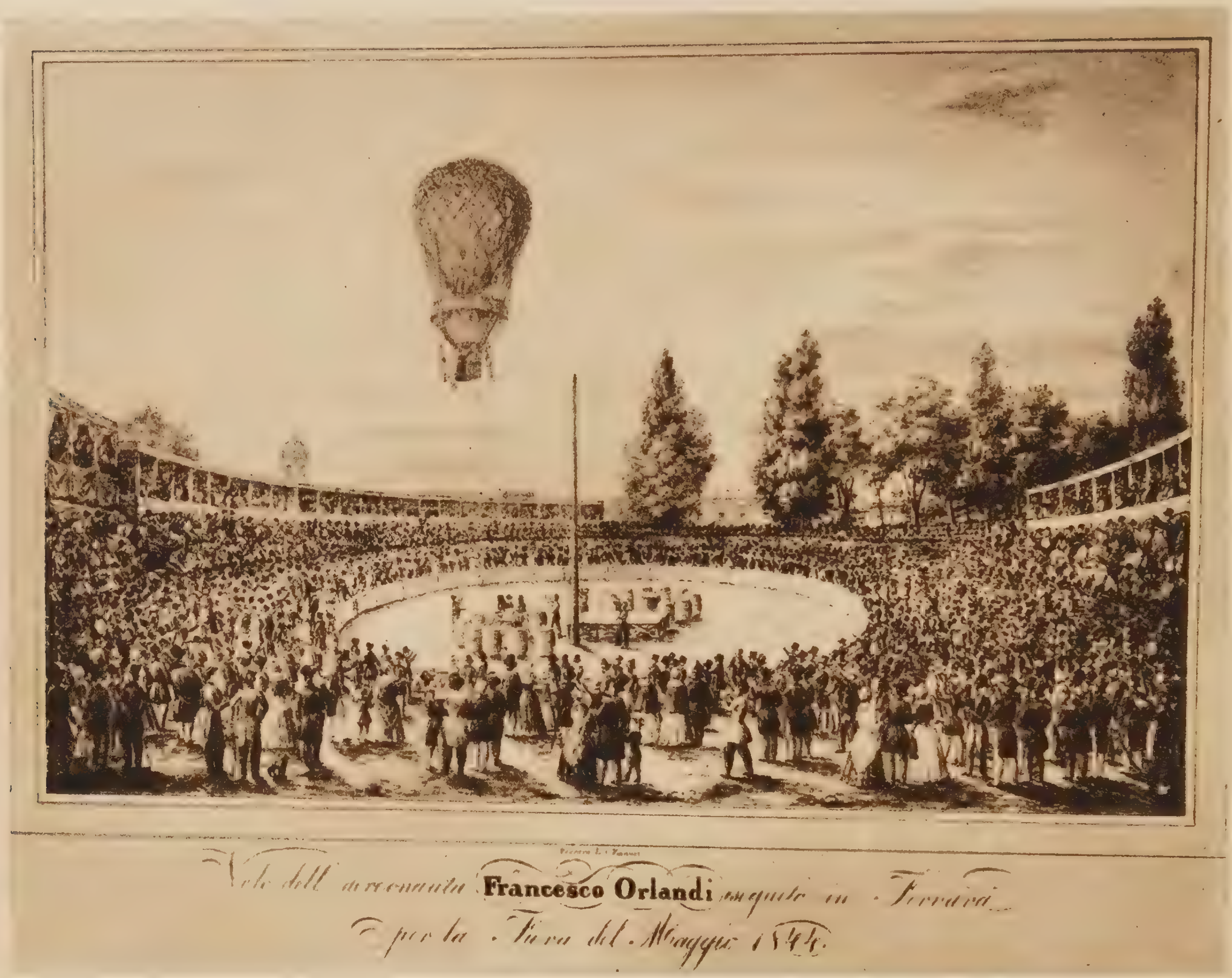
The fact is that Poe, the great romanticist, reached New York from Philadelphia the Saturday before in the rain, with a sick wife and with but $4.50 in his pocket. It was strictly up to his marvelous imagination to put him in funds.

Facsimile of Poe's "Great News Beat" and picture captioned "The Model of the Victoria" (See Page 292 are reproduced from the *New York*) *Sun* (April 13, 1844). Portrait of Poe (right) given to New York Public Library by Amelia Poe.

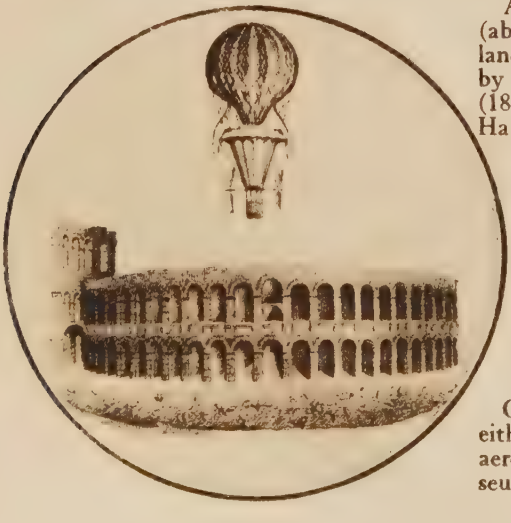


Edgar A Poe.

ITALY *Decorates* HERO *for* SERVICE *to the* EMPIRE—1844

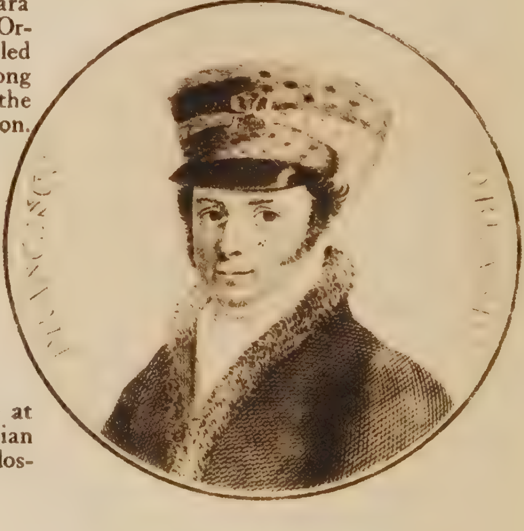

Volo dell' aeronauta **Francesco Orlandi** eseguito in Ferrara
per la Fiera del Maggio 1844.

FRANCESCO ORLANDI of Bologna, Italy, appears—a worthy successor to Zambeccari, Andreani, Andreoli and others, to carry the torch in Italian aeronautics. Orlandi had assisted Zambeccari and was a balloon pioneer in Italy. He came along (1838) with a novel combination of hot air and hydrogen gas balloon. This had a spherical gas balloon above and an inverted conical "Montgolfiere" below. A sort of valance around the top of this became a parachute if necessary. Double triangular wings formed a propeller on either side of the car, and the affair had a rudder. Orlandi made numerous ascents in this machine in Italy and Spain and attracted much attention.

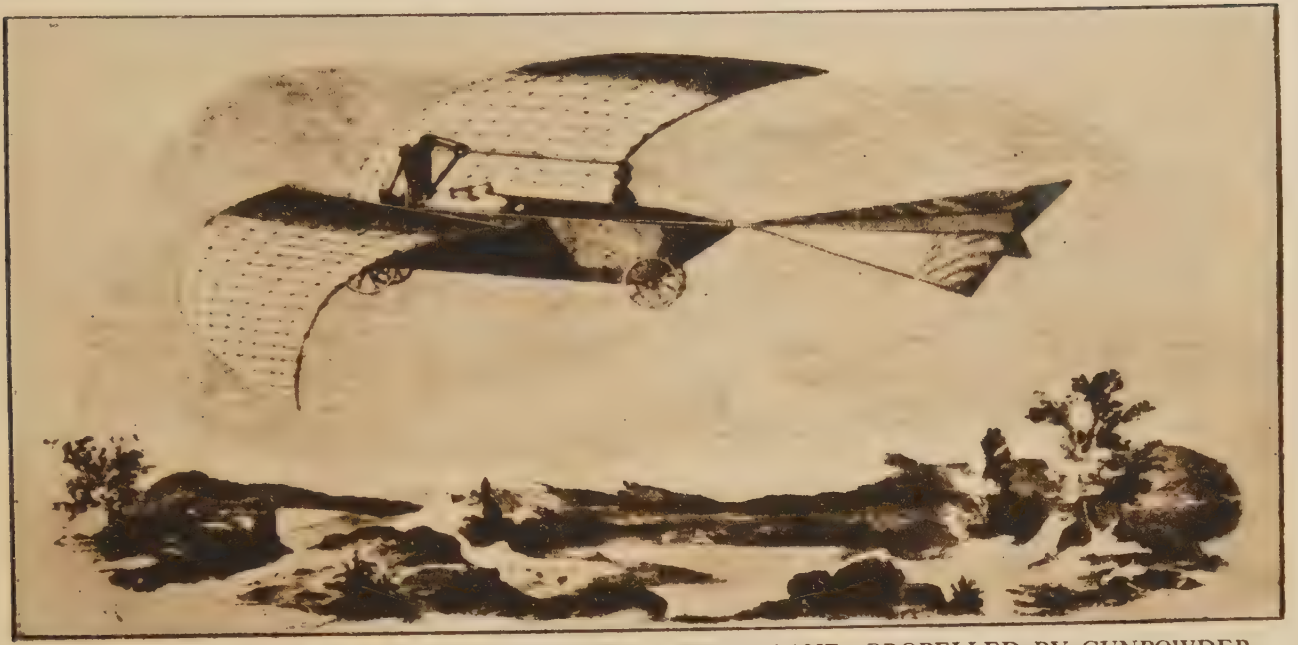


A great Fete Day in Ferrara (above) shows Francesco Orlandi's Dirigible being hailed by an enthusiastic throng (1844). Old prints in the Harry Guggenheim Collection.

Orlandi Medal (one face at either side) shows the Italian aeronaut rising from the Colosseum in Rome.



First ROCKET PLANE *in History*—GERMANY—1847



GERMAN ARMY OFFICER PROPOSES FIRST ROCKET PLANE—PROPELLED BY GUNPOWDER

This striking airplane design (above) appeared in the Leipzig *Illustrierten Zeitung* (1847). This airplane was to be propelled by the explosive force of gunpowder. It is believed to be the design of Werner Siemens, a German Army officer who studied Aerial Navigation extensively at that time. Note the warped wings.

HERE we first meet Henry Tracey Coxwell, son of a British Navy officer and later a noted English aeronaut. We see him (below) in one of his earliest adventures as he ascends with Richard Gypson and two others from Vauxhall Gardens, London, with a cargo of fireworks (July 6, 1847).

They rose through a heavy thunderstorm and the balloon may have been struck by lightning. At 7,000 feet up—Coxwell, sitting in the hoop above the car, noticed gas blowing off through the balloon neck. Suddenly the great bag collapsed and fell at terrific speed.

Coxwell cut the neck-line — and the big balloon bloomed out like a parachute. It landed its four occupants with only a bad shaking up.

Coxwell later succeeded Charles Green as England's leading aeronaut. With Dr. James Glaisher, noted English scientist, we shall find him making an altitude record which stood for sixty years.

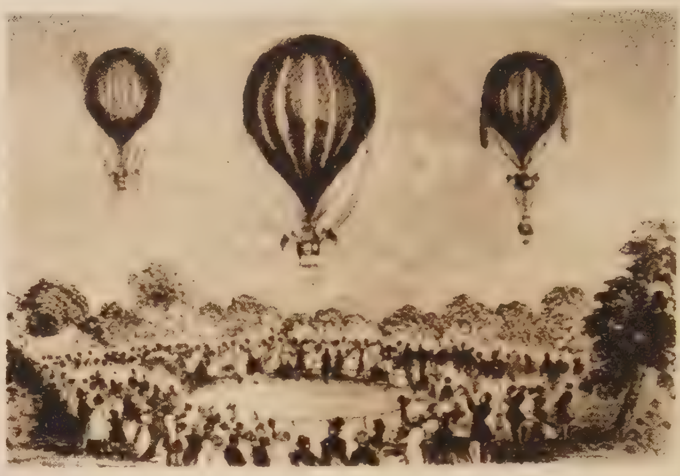
Old plate (left) in *The Balloon Magazine*, (1847) conducted by Coxwell under the pseudonym, "Henry Wells."

GUILLOT ASCENT

Engraving (right) in the Bella C. Landauer Collection, records the novel ascent of M. Guillot from Naples Italy (March 25, 1847).

Proposed RESCUE *of Sir John* FRANKLIN *in* ARCTIC—1848

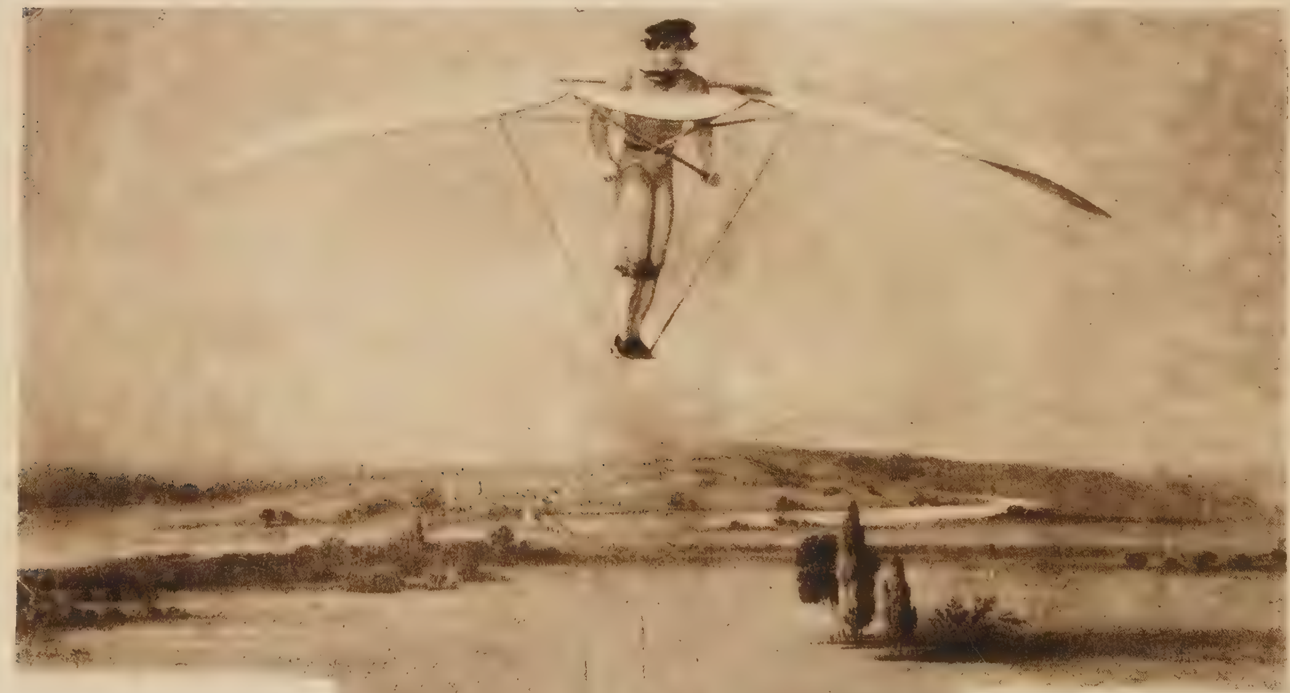
PORTRAIT OF GALE—In Cuthbert Collection.



LIEUTENANT GEORGE BURCHER GALE, Royal Navy, was an English aeronaut of inventive genius. His "Newly Invented Aerostatic Machine" (1847) had one great main balloon and two auxiliaries. Gale believed this device would enable him to go much higher into the heavens than hitherto known. He had a double car, one inside the other.

Gale made over a hundred ascents. He crossed the English Channel in his "Aerostatic Machine" and offered it to the British Admiralty to search for the Sir John Franklin Expedition, lost in the Arctic.

Gale was killed at Bordeaux (September 8, 1850), Landing after an equestrian ascent, his pony was freed too quickly and Gale was carried up clinging to ropes—falling from a great height.



MAN-POWER
FLYING MACHINE
Designed by
Dr. W. Miller (M.R.C.S.)
London (1843)

The Miller Ornithopter consisted of wings of Oiled Silk and Hollow Cane to simulate bird's wings. Lithograph in the Cuthbert Collection

ENGLAND *Produces* FIRST AIRPLANE *Model to* FLY—1848

THE FIRST ENGINE-DRIVEN model airplane flies! The historic honor belongs to John Stringfellow (1799-1883), English engineer whom we met in these pages with Henson.

Stringfellow kept on at his epochal task after Henson gave up in disgust and left England for America with his bride. Stringfellow constructed another model, of some 20 feet wing spread with twin propellers, and further improved its light steam engine.

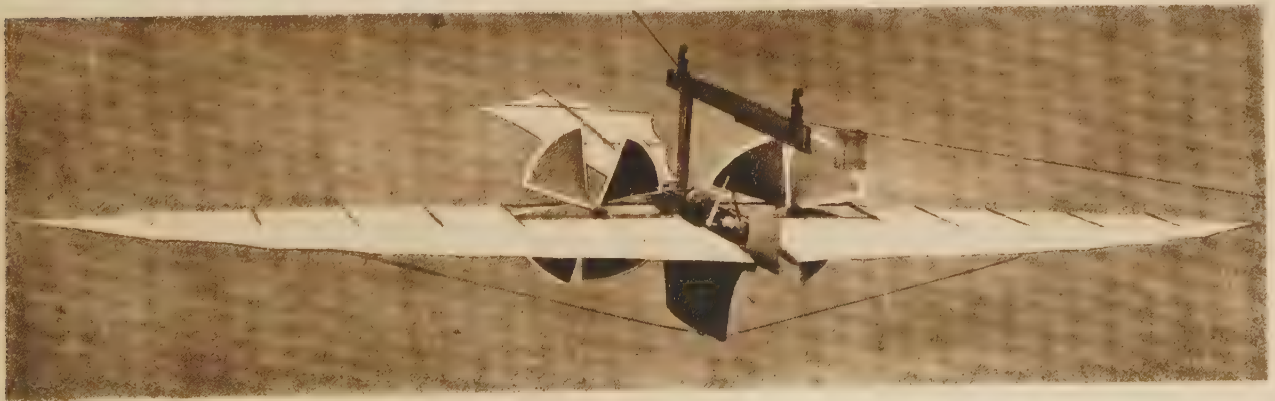
Poised suspended on a starting wire, this portentous product of one man's genius was released. When it came to "the point of self-detachment it gradually rose until it reached the farther end of the room," an unused portion of Stringfellow's lace factory at Chard, in Somerset.

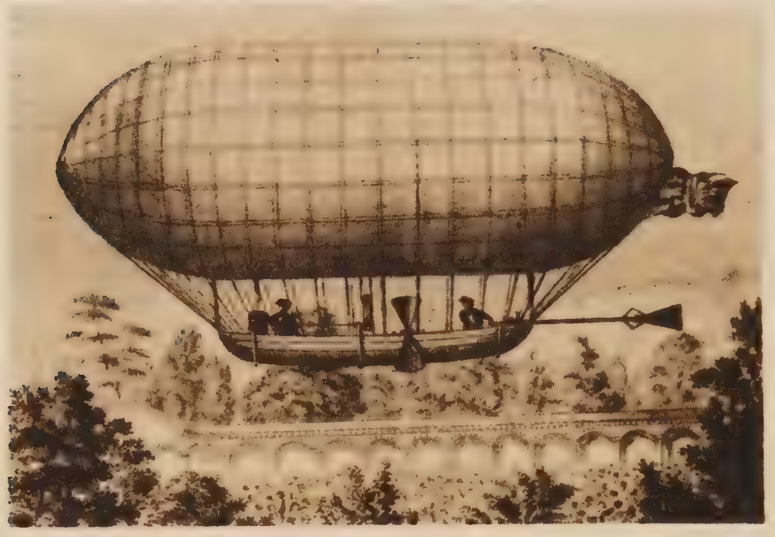
Dynamic flight was thus first accomplished (June 1848). The lessee of Cremorne Gardens in London (a man named Ellis) saw the experiments at Chard and offered to build a "covered way" at Cremorne for experiments in London.

Stringfellow took his model airplane to London—but Ellis' promises were not fulfilled satisfactorily. Stringfellow was about to leave for home when "a party of gentlemen begged to see an experiment, and finding them able to appreciate his endeavours, he got up steam and started the model down the wire." The model appeared to meet some obstruction as it left the wire, but "soon recovered itself and darted off in as fair a flight as it was possible to make, to a distance of about 40 yards, where it was stopped by the canvas."

Stringfellow's son (F. J. Stringfellow, who was present) records that his father "having now demonstrated the practicability of making a steam engine fly, and finding nothing but a pecuniary loss and little honor," was content to leave the matter there. He and his son soon left for the United States for extended travel here. Twenty years later, we shall find him making further experiments.

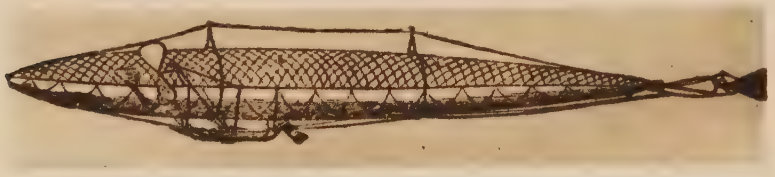
PORTRAIT OF JOHN STRINGFELLOW (right) —Replica of Stringfellow's "First Successful Airplane Model in the World" with original parts (below) is in the Science Museum at South Kensington, London.





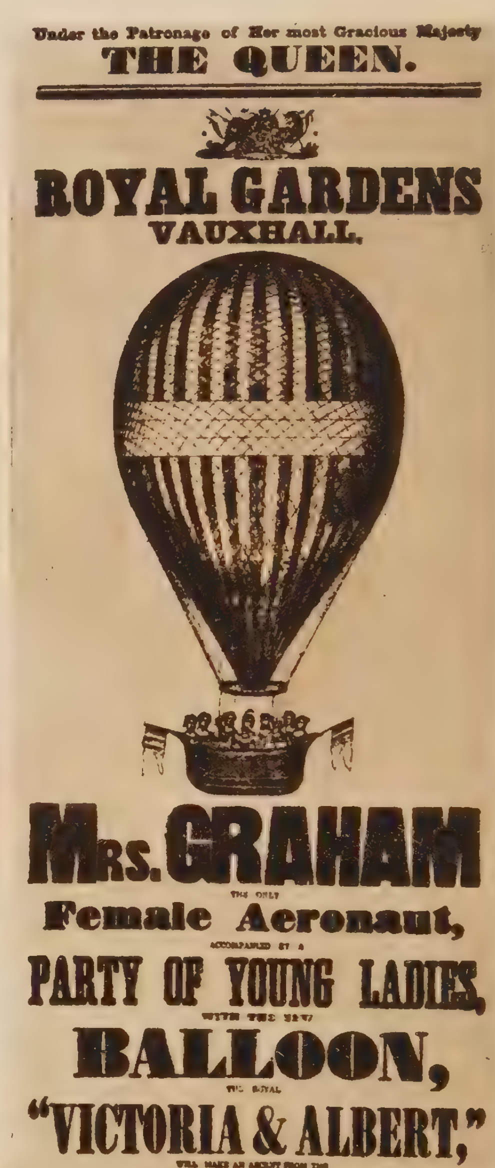
HUGH BELL'S PATENT "LOCOMOTIVE" (above) was the "First Attempt to Use a Propeller in a Dirigible Balloon." It was propelled by man-power. Its trial at Vauxhall (July, 1850) failed.

PIERRE JULLIEN, a Villejuif clockmaker, exhibited a Model Airship (below) at the Paris Hippodrome (1850).



GEORGE GRAHAM and his wife Margaret (below) were thrown out of their balloon car onto the roof of Colonel North's house in Arlington Street, St. James's, London, (June 16, 1851) after an ascent from Batty's Hippodrome, Kensington Road.

The balloon struck a pole atop the Hippodrome. They quickly threw out all ballast because of leaking gas. Their grappling iron caught in the coping of Colonel North's roof. This ended twenty-five years of ballooning by Graham, but his wife continued two years before she stopped. Both had numerous accidents during their careers.

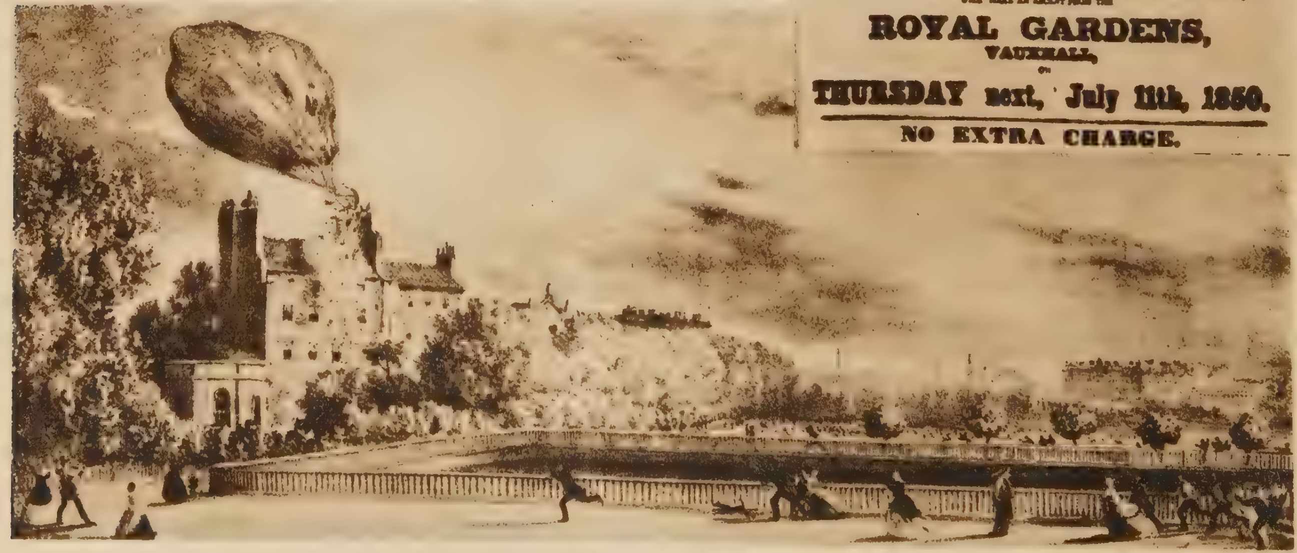


Under the Patronage of Her most Gracious Majesty
THE QUEEN.

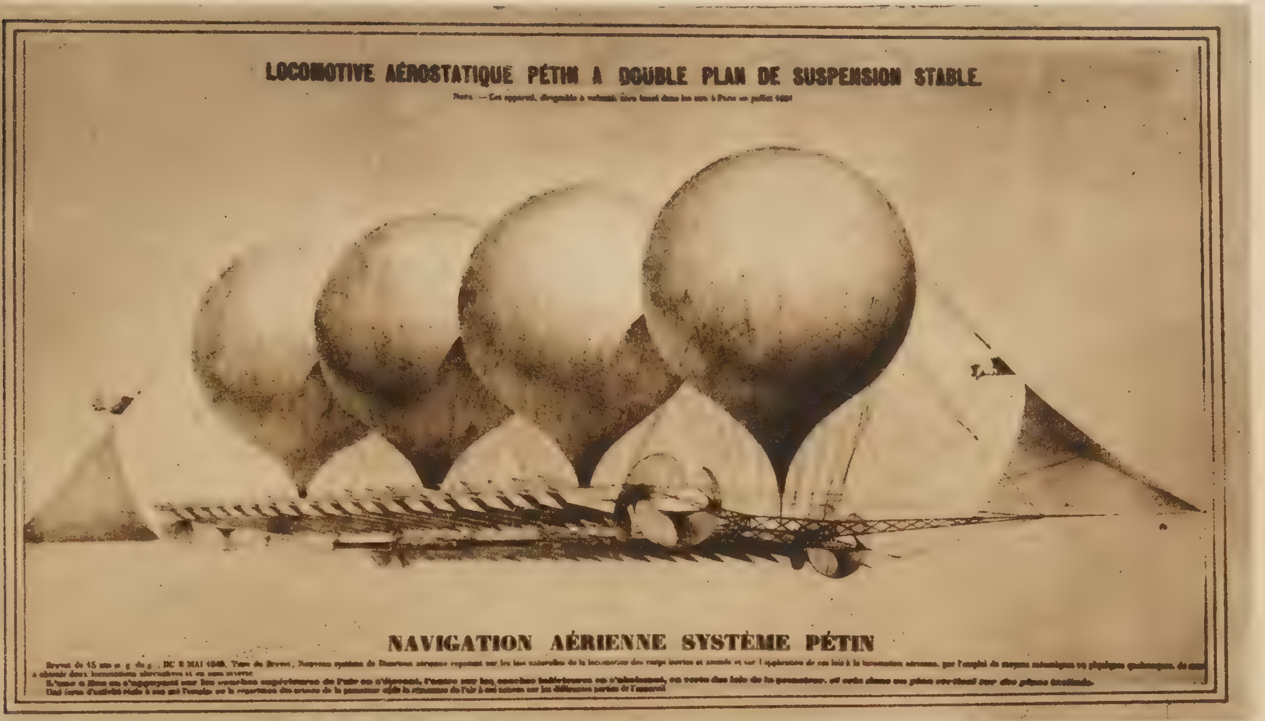
ROYAL GARDENS
VAUXHALL.

MRS. GRAHAM
THE ONLY
Female Aeronaut,
ACCOMPANIED BY A
PARTY OF YOUNG LADIES,
WITH THE NEW
BALLOON,
THE ROYAL
"VICTORIA & ALBERT,"
WILL MAKE AN ASCENT FROM THE
ROYAL GARDENS,
VAUXHALL,
ON
THURSDAY next, July 11th, 1850.

NO EXTRA CHARGE.

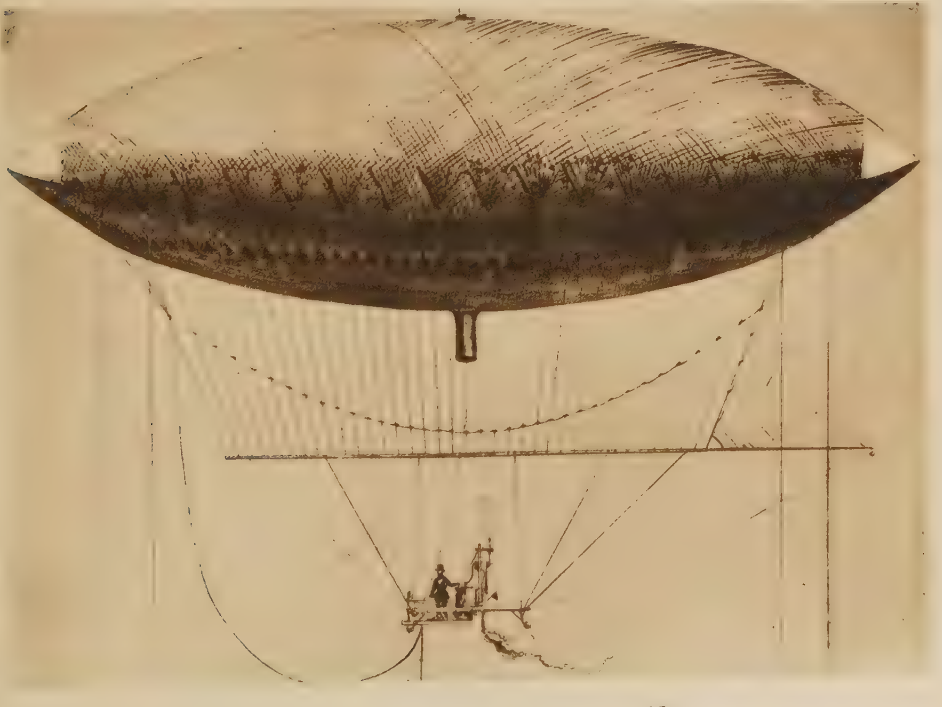


Steam AERIAL LOCOMOTIVES *Come with* RAILROADS—1851


LOCOMOTIVE AÉROSTATIQUE PÉTIN A DOUBLE PLAN DE SUSPENSION STABLE.
NAVIGATION AÉRIENNE SYSTÈME PÉTIN

ERNEST PETIN CONSTRUCTS "LOCOMOTIVE AEROSTATIQUE" (1851)—but never tried it out in actual flight. Petin was a Paris milliner. He proposed four large balloons (above) attached to a rigid keel—to sustain an Airship with inclined planes at either side for ascent or descent. The ship was to be propelled by Archimedian screws, "operated by man or other power."

HENRI GIFFARD (1825-1882), distinguished French engineer, is "The Fulton of the Air." He built the *First Practical Dirigible Airship* (below) and navigated it through the sky (1852). His remarkable accomplishment was doubly notable because of the terrible danger. He installed a steam engine for power, with a brisk fire under its boiler. His balloon was inflated with highly inflammable hydrogen gas. Giffard's successful airship added to his fame, already great because he was the inventor (at 24 years of age) of the injector for the steam engine.

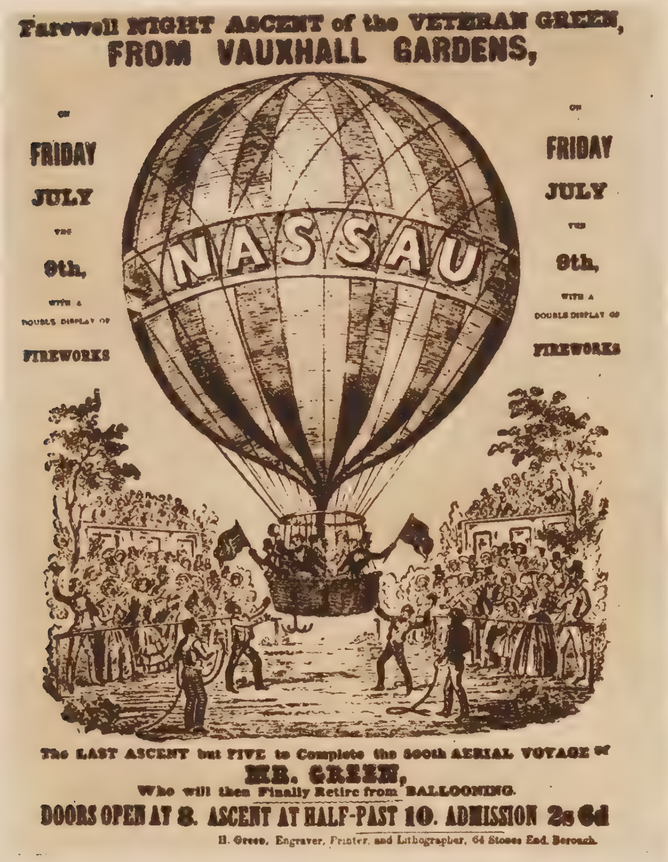


Giffard built himself a light steam engine of 3-horsepower and patented this and the aerostat (left). He installed it in a 144-foot elongated dirigible, suspended 20 feet below the envelope. This drove a three-bladed propeller at 110 revolutions per minute and gave the ship a speed of 6 miles an hour.

Giffard made a successful flight in this ship from the Paris Hippodrome, landing safely near Trappes (September 24, 1852). He continued in aeronautics for years and even built a larger airship on this model (1855).

HISTORIC PRINTS

Engraved plate of Petin's design in the Harry Guggenheim Collection, New York. Old print of Giffard's steam-engined airship in the Paul Tissandier Collection in Paris.



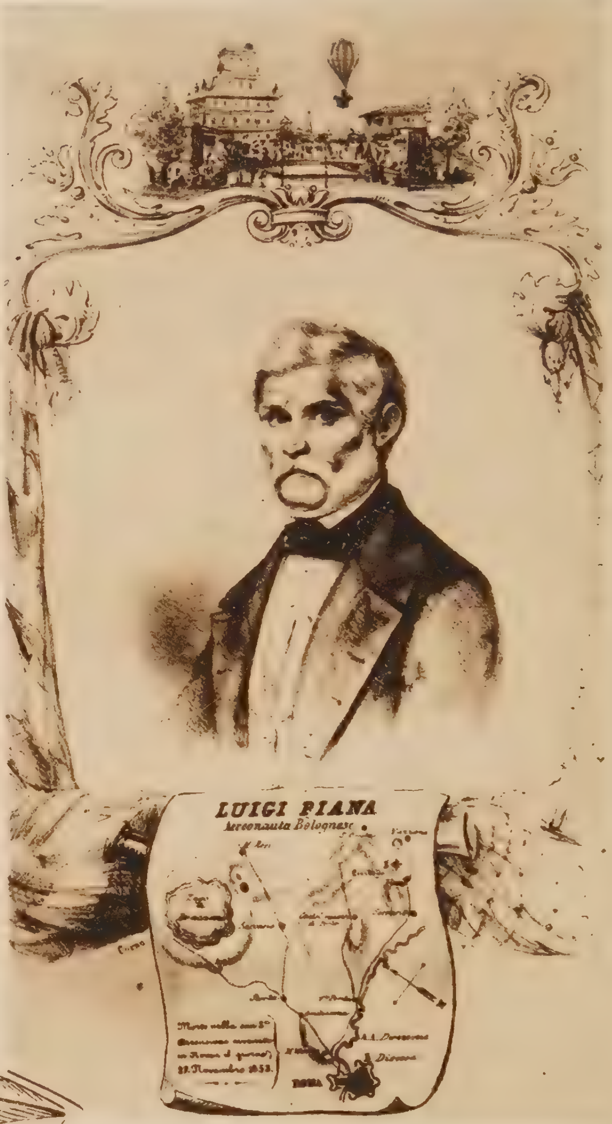
Farewell NIGHT ASCENT of the VETERAN GREEN,
FROM VAUXHALL GARDENS,

ON
FRIDAY
JULY
THE
9th,
WITH A
DOUBLE DISPLAY OF
FIREWORKS

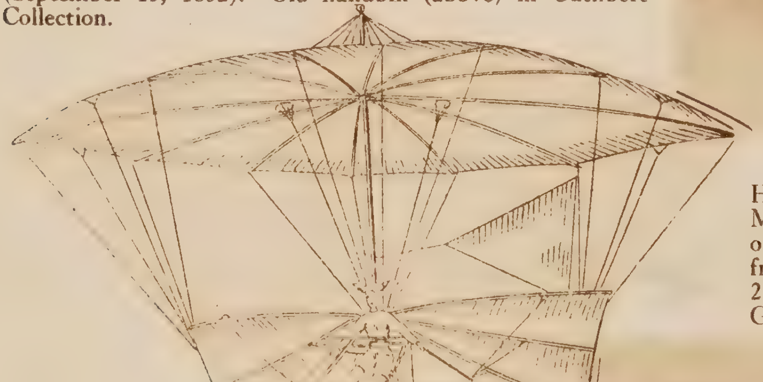
ON
FRIDAY
JULY
THE
9th,
WITH A
DOUBLE DISPLAY OF
FIREWORKS

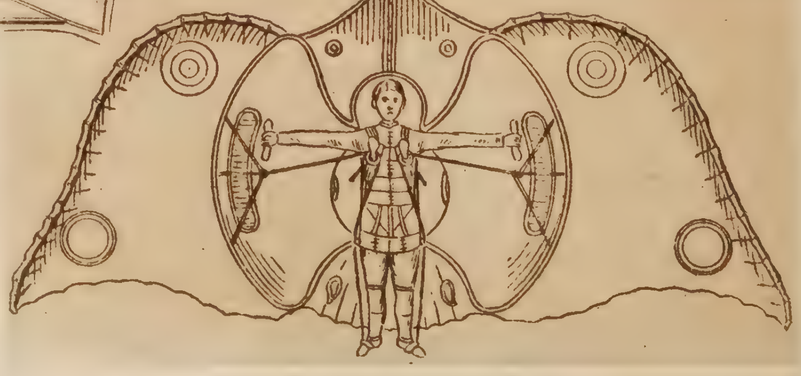
The LAST ASCENT but FIVE to Complete the 500th AERIAL VOYAGE of
MR. GREEN,
Who will then Finally Retire from BALLOONING.
DOORS OPEN AT 8. ASCENT AT HALF-PAST 10. ADMISSION 2s 6d
H. Green, Engraver, Printer, and Lithographer, 64 Stones End. Borough.

GREEN, now 67 years of age, determined to excel all other records with 500 ascents. He is shown here making his 495th—his final night ascent (July 9, 1852). His 500th and final ascent was made two months later (September 15, 1852). Old handbill (above) in Cuthbert Collection.



LUIGI PIANA—ITALIAN AERONAUT—He followed the illustrious Zambeccari, Orlandi, Muzzi and others in ballooning in the land of Da Vinci. He made four successful ascents from Rome and was killed on the fifth (November 27, 1853). Old engraving (above) in Harry Guggenheim Collection.





LETUR—FRENCH AERONAUT—He lost his life in this parachute flying machine (above). He ascended from Cremorne Gardens, London, fastened to the balloon of Aeronaut Adams (1854) and performed evolutions while descending; he was thrown against trees and mortally injured.

BREANT, another Frenchman, designed the odd flapping-winged contrivance (right). Drawings from Chanute's "*Progress in Flying Machines.*"

"*Un* PLAISIR AERIEN" *and French* "FILLES *de* L'AIR"—1852

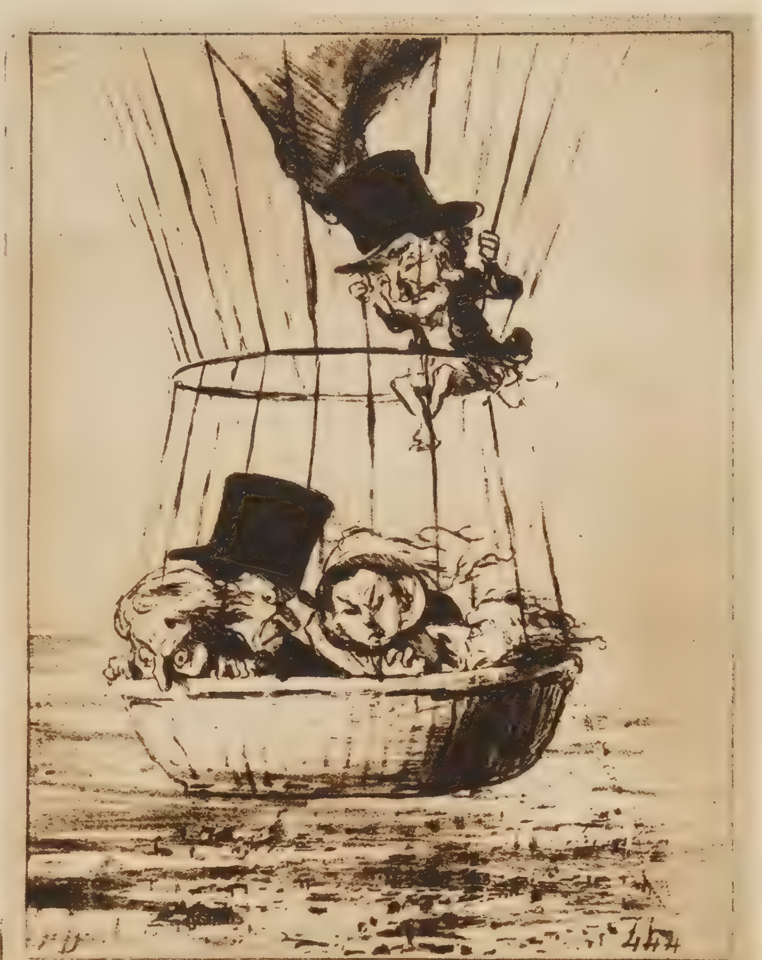
EMPRESS EUGENIE followed French satirists with deep delight (1853). Her husband Napoleon III was equally considerate. The son of Louis Bonaparte, brother of Napoleon I, he had kept all Europe anxious for years.

His Mother, Hortense de Beauharnais, had been suspected by the Bourbons of having arranged Napoleon's return from Elba, and was sent into exile after Waterloo, with the seven-year-old Louis Napoleon. She wandered from Geneva to Aix—Carlsruhe—Augsburg—Lake Constance—finally to Italy.

Louis at 20, was a Liberal and a hater of the Bourbons; and the Revolution of 1830 roused his young hopes. He and his mother were in England. Louis Philippe of France, fearing the young pretender might become a popular martyr, had him shipped to America (February, 1837), where he was set free in New York.

Four months later, by the aid of a forged passport, Louis Napoleon was again in Switzerland and in time to see his mother before her death (October, 1837). Imprisoned in the Fortress of Ham, he escaped to London (1846), finally to be elected to the French Presidency (1848). Four years later the third Napoleon was Emperor of France.

ORIGINALS IN THE
GUGGENHEIM COLLECTION



UN TRAIN DE PLAISIR AÉRIEN

L'aéronaute.— Eh! bien, messieurs, que dites-vous de ce spectacle?
Un bourgeois.—Je dis que je suis bien fâché d'avoir payé ma place trois cents francs!

Un service qui n'est pas facile à rendre

(Translation from above)
THE JOY-RIDE
IN A BALLOON

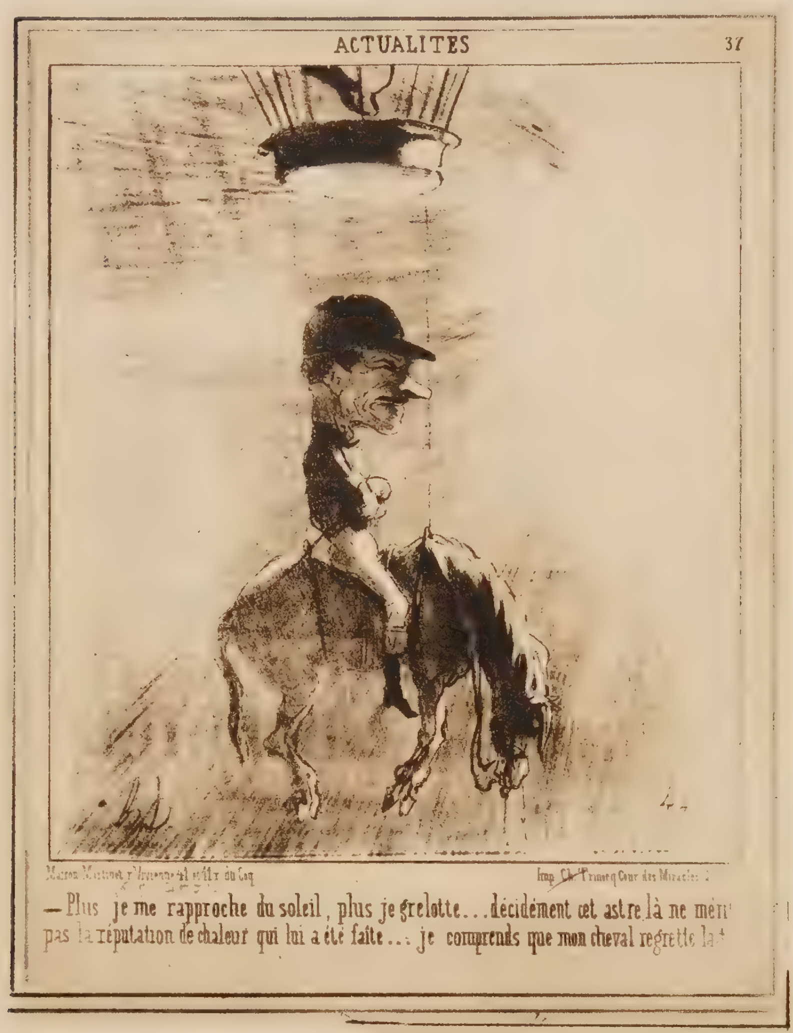
Pilot: "Well, gentlemen, what do you think of the sights?"

Citizen: "I think I am sorry to have paid 300 francs for my seat."

Cartoon (left)

"A little service which is not so easy to give."

Recondite HUMOR *of the Suave* FRENCH SATIRISTS—1853


ACTUALITES
37
Maison Martinet r. Vivienne 41 et r. du Coq
Imp. Ch. Trinocq Cour des Miracles

—Plus je me rapproche du soleil, plus je grelotte... décidément cet astre là ne mérite pas la réputation de chaleur qui lui a été faite... je comprends que mon cheval regrette la t

NAPOLEON III is crowned Emperor of France (1852). Esquestrian ascents are made in his honor. The Godards are now the "World's Greatest Aeronauts."

French caricaturists of the Second Empire are quick in their *retorts amiable* in "pricking the balloon" of republican politics which has exploded with loud detonation. Satirical thrust, witty invective, humorous jibe is the order of the day — for the Royalist is now entrenched in power and the revolutionist is a victim of circumstances.

Le Charivari, the French satirical periodical with large circulation, lampoons the politicians, pillories popular foibles, and ridicules international figures. Aerial travel is the popular vehicle for the cartoonist's sabre-pointed duels.

We present a group of contemporary cartoons in the days of Napoleon III. The French citizen (left) is looking down benignly from "his place in the sun." An Admiral (unnamed) is greeting two "Filles de l'Air" (below). There is a recondite thrust to the French expose which only the people of the time could appreciate.

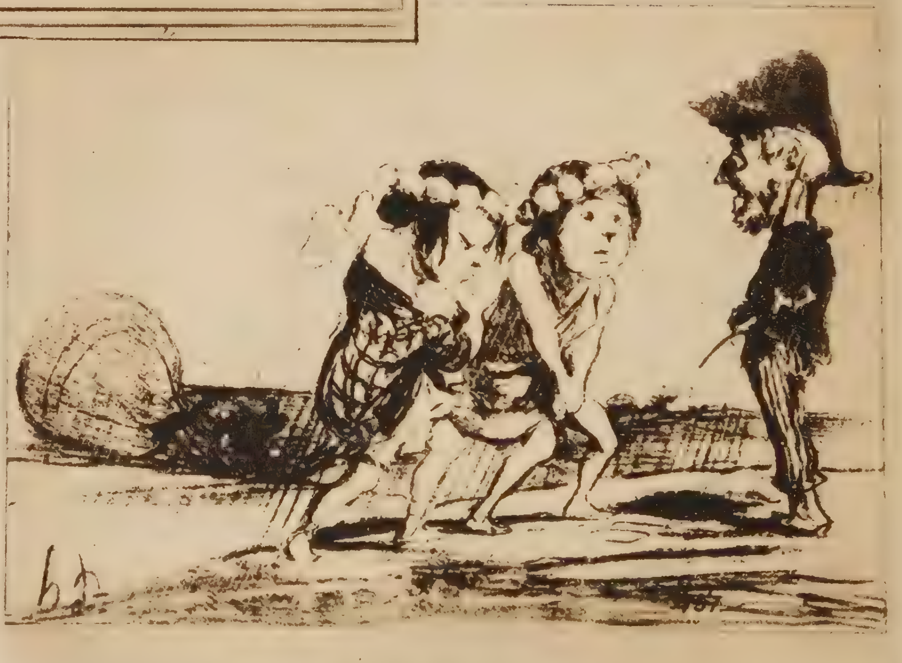
Historic
French
Prints
in the
Guggenheim
Collection

(Translation from above)

"The closer I get to Mother Sun, the more I shiver . . . decidedly this plane of existence does not merit its reputation for heat . . . I believe even my horse feels homesick for solid ground."

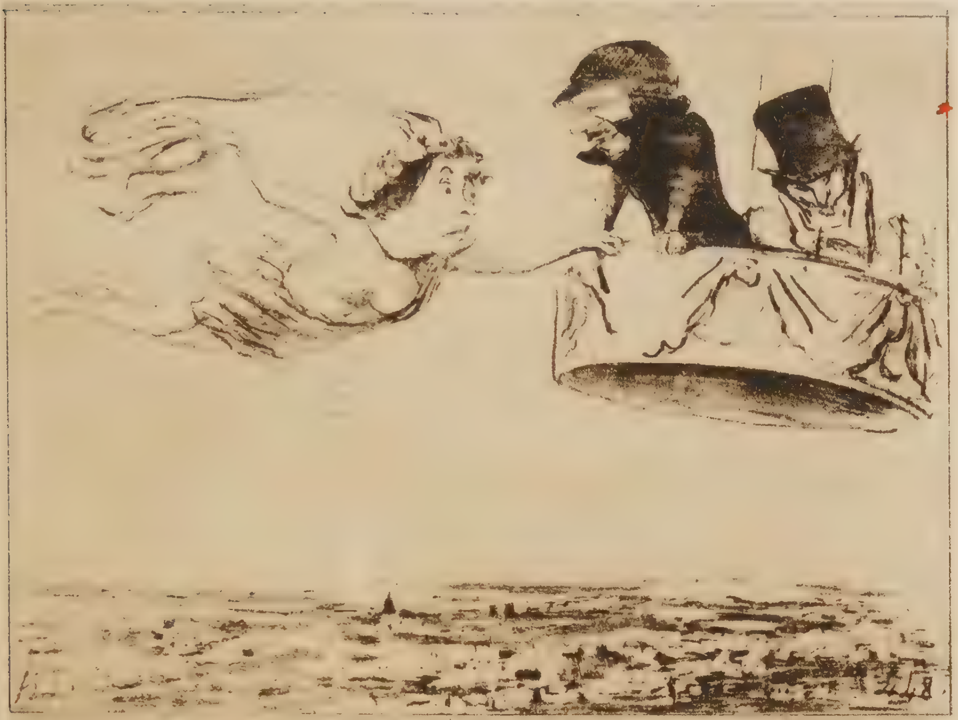
Cartoon (right)
"The Arrival on Earth of the Daughters of the Sky."

Originals in the
HARRY GUGGENHEIM
Collection of
Aeronauticana



[illegible] ces filles de l'air

PARISIAN *Conception of* ABDUCTION *of Mademoiselle*—1854



ENLÈVEMENT D'UNE FILLE DE L'AIR

Voyons M. Godard, je suis gelée, rentrez-moi dans la nacelle
C'est impossible tant que nous serons en vue de Paris
Mais j'ai un rhume de cerveau affreux

KIDNAPPING OF A DAUGHTER OF THE AIR

(Cartoon on left)

"Come, Mr. Godard, take me into your basket."

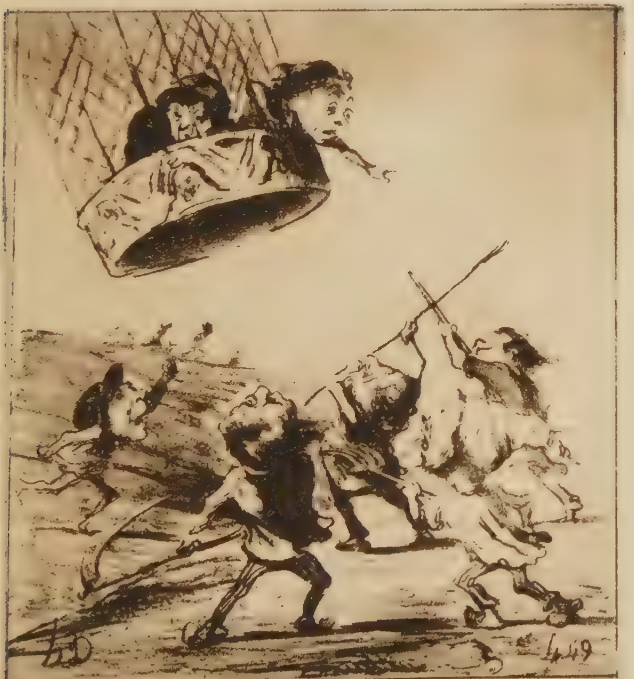
"That is impossible just now—*all Paris is looking on!*"

"But I have a terrible cold in the head!"

Rare Prints of the Third Empire

LANDING IN DISTRESS—Cartoon below

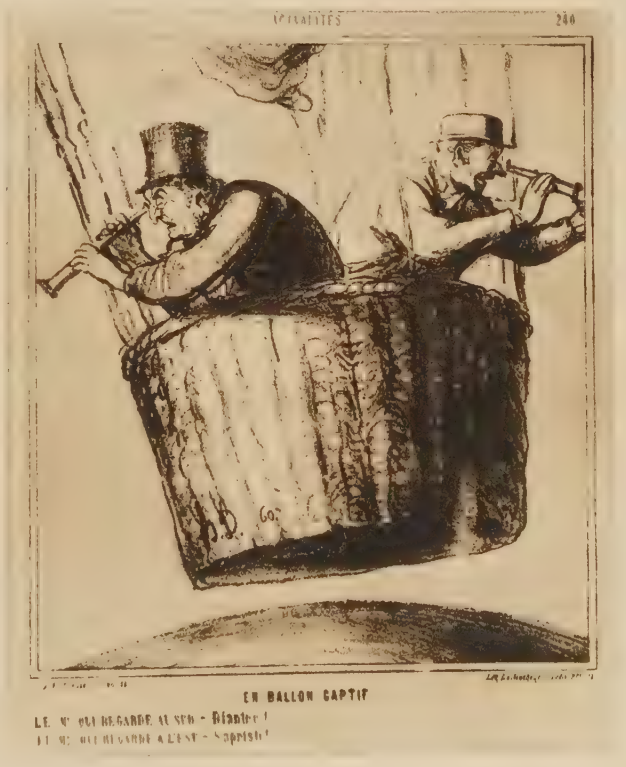
"It is inconvenient for a Paris aviator to make his landing in a country where the inhabitants are not *Scotch!*"



Inconvénient pour un aeronaute parisien d'opérer sa descente dans une contrée qui n'est point habitée par des Écossais.

IN A CAPTIVE BALLOON—Cartoon below

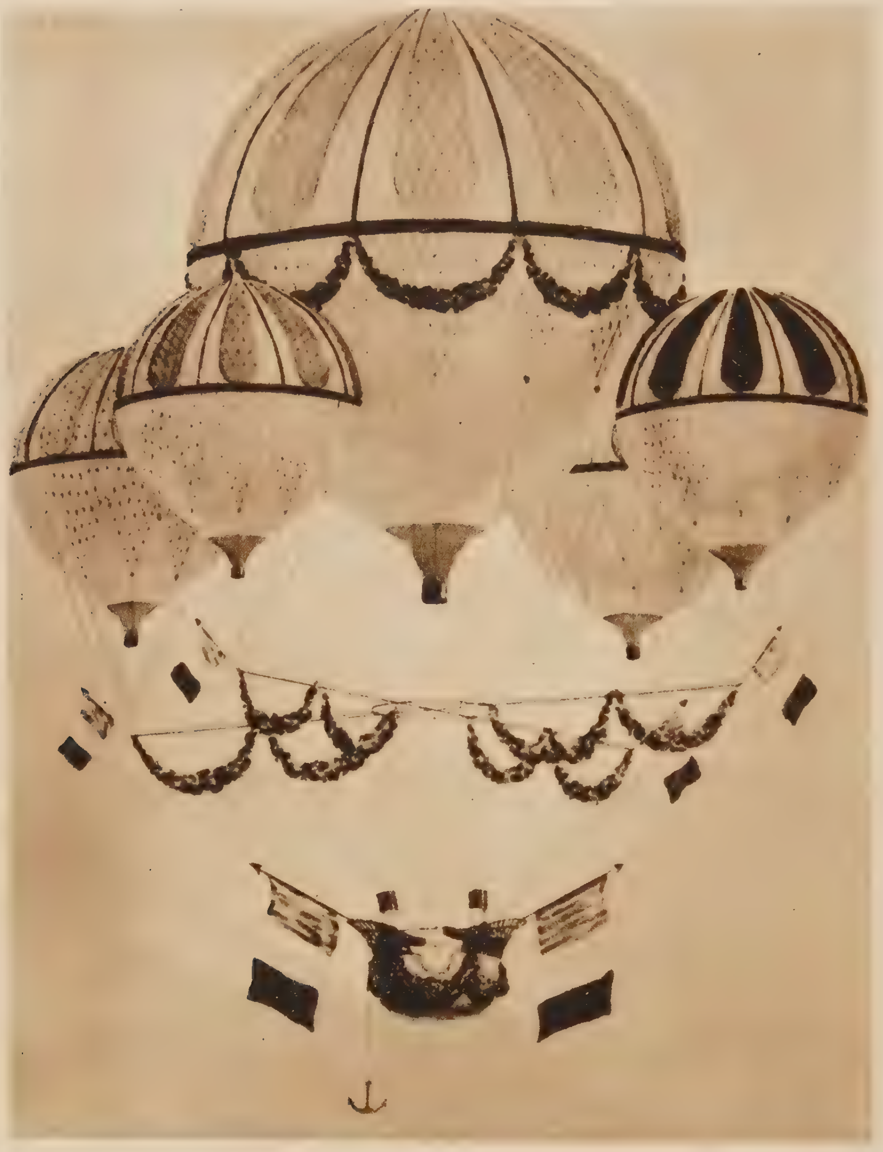
The Man Who Looks East—*"For Heaven's Sake!"*
The Man Who Looks South—"Well, Well!"



EN BALLON CAPTIF

LE M^r QUI REGARDE AU SUD - Diantre !
LE M^r QUI REGARDE A L'EST - Sapristi !

MASTERY *of* AIR *Develops New Aerostatic* MARVELS—1855



EUGENE GODARD (Born at Batignolles, 1827) was a distinguished French aeronaut with more ascents to his credit than any other living man. He was official Aeronaut to Emperor Franz Joseph of Austria and later to Napoleon III.

Godard was the eldest of the most noted family of aeronauts France ever produced—four brothers and one sister. He made his first ascension at Lille (1849) and followed with more than 2,000 ascensions all over Europe, in the United States and Canada, Mexico and the West Indies. It was he, as the eldest, who brought his whole family into aeronautics, his sister Eugenie and his brothers Louis, Jules and August. All made names for themselves and their descendants, some of them, are airplane enthusiasts today.

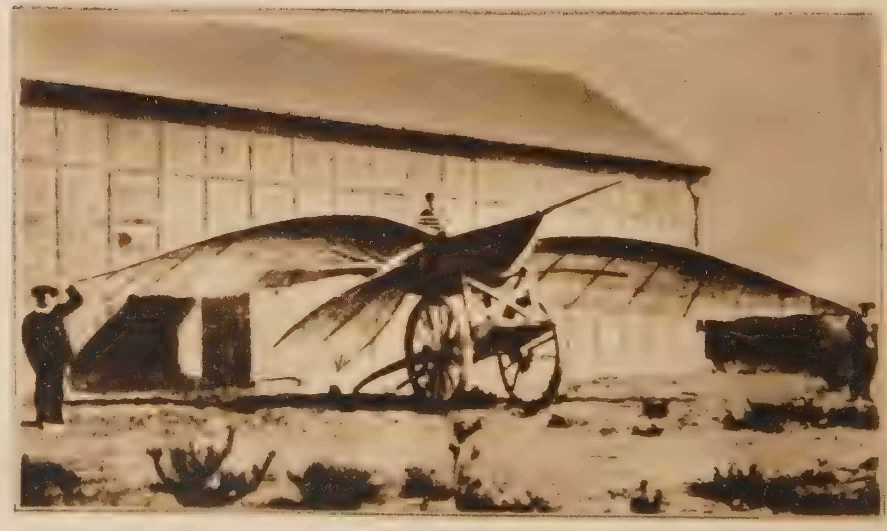
Godard designed this Balloon Carriage (right) along lines popular with French aeronauts of his day. We shall later find him building "L'Aigle," the largest hot air balloon England ever saw, which he used to rescue his entire family from the French capital during the Seige of Paris (1870). The design (right) is in water colors by Eugene Godard (1855).

Collection
of Comte
de la Vaulx
in Paris

JEAN-MARIE LE BRIS (1808-1872) was a Brittany sea captain. He made a notable attempt (1857) to imitate that tremendously powerful bird, the albatross.

He built an "Artificial Albatross" (left) of light ash wood and canton flannel, steel wires, cords to work the 23-foot wings, and a canoe body in the shape of a wooden sabot.

Le Bris tried this out at Trefeuntec, near Brest, on a Sunday morning. Hitched by a long rope to a cart in the public road, the man-made bird carried Le Bris up as the horse trotted forward. The rope caught around the body of the driver and carried him into the air. Le Bris had to come down to prevent accident.



Adventurous AMERICANS *Challenge* ELEMENTS—1856-9

JOHN WISE'S GREAT BALLOON (above)—"Largest by far yet seen in Boston"—feature of Fourth of July Celebration, "The Fall of Sebastopol" (1856)—Wise and his son, Charles E. Wise, ascend to 8,000 Feet, remain in air an hour and five minutes.

IRA THURSTON
Lost in Lake Erie (left)

He ascended at Adrian, Michigan. The rope cut, the balloon turned over and shot into the air—with Thurston clinging to it. Next day the empty balloon was found on the Canadian shore. Thurston never was seen again. (August 16, 1858).

JOHN WISE, America's leading aeronaut, established an amazing world distance record (1859) which stood for 41 years—1,120 miles in just under 20 hours—from St. Louis, Missouri, to Henderson, Jefferson County, New York state (near Watertown).

The big balloon "Atlantic" (above) was built in St. Louis by the Transatlantic Balloon Company--John Wise, John La Mountaine of Troy, N. Y., (aeronaut), O. A. Gager of Bennington, Vermont, and Messrs. Johnson and Gilbert of St. Louis. They planned a Transatlantic Balloon Voyage.

The trial voyage from St. Louis to New York was started (July 1, 1859). Wise was "Director-in-Chief;" La Mountaine, "Aeronaut;" Gager, "Scientific Observer;" and William Hyde, "Scribe," of the *St. Louis Republican.* The American Express Company put an overland mail bag for New York into the balloon car.

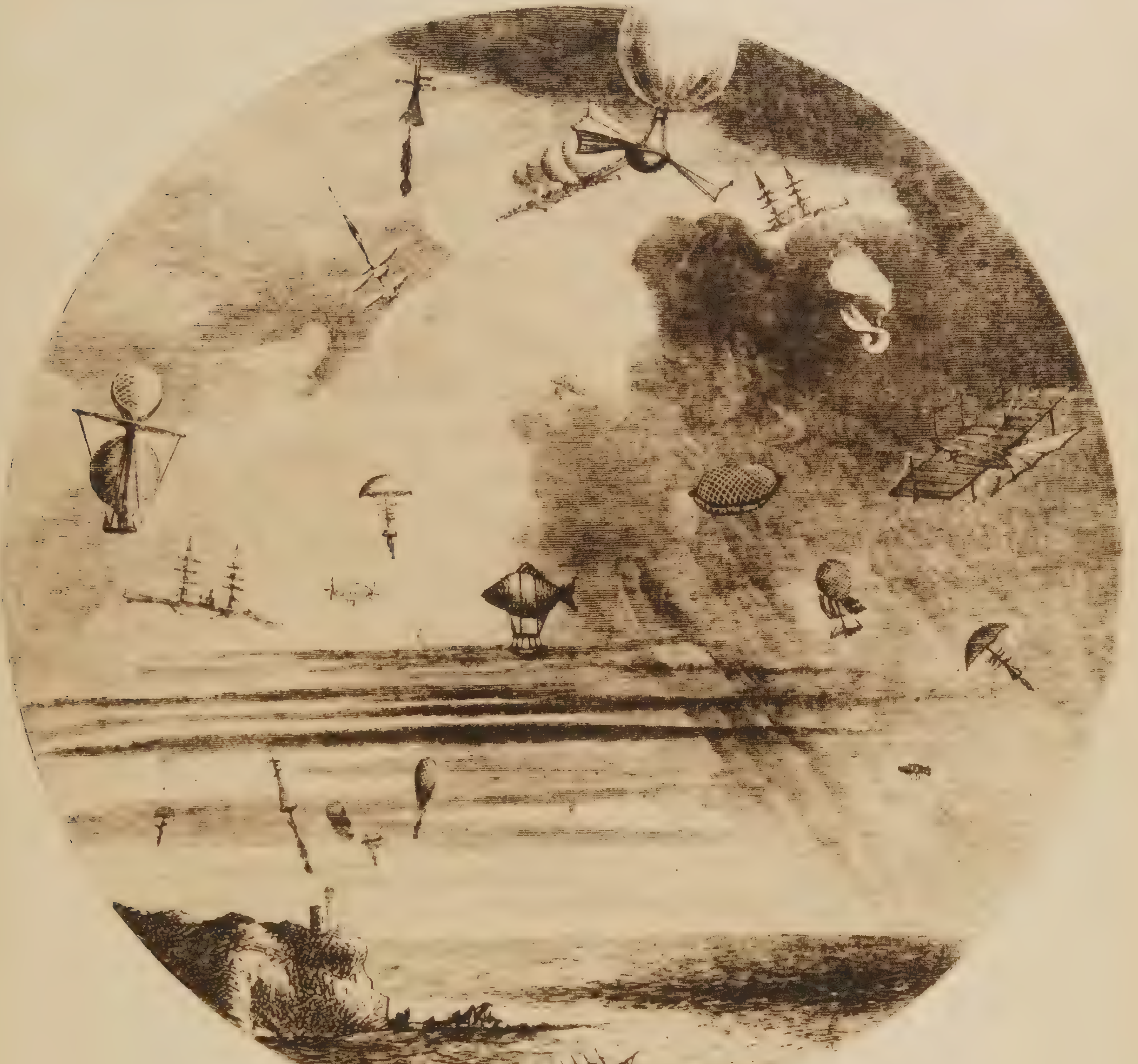
They made Toledo, Ohio, before midnight and sailed along over Lake Erie through the night, keeping well out from shore. They saw dawn over Niagara Falls—far off their course. They tried to land near Rochester, but were coming down in a small lake, so threw out ballast and rose to drift over Lake Ontario and then back over the land—finally reaching terra firma on the Truman B. Whitney farm in Henderson, N. Y. at 2.35 P.M. (July 2, 1859).

Fourteen years later the *New York Graphic* backed Wise for a Transatlantic Balloon Crossing. The huge balloon collapsed during inflation and was ruined (September, 1873).

"GRAND ADVENTURE OVER LAKE ERIE" (above)—"Professor" Lynn, with a male companion, makes a grand ascension at Cleveland, Ohio, then a city of some 45,000 (July 1859), and is swept out over Lake Erie. His gas seemed of insufficient lifting power, after everything movable had been thrown out. The balloon and occupants fall into the lake, to be rescued while holding onto the ropes and wildly waving a flag.

"ESCAPE IN A GALE OVER GEORGIA" (below)—Savannah, Georgia, was startled by the adventure of two of its citizens, Messrs. Sevor and Dalton (April 1860). Ascending in a balloon when the wind was rising to gale strength, they were quickly blown out of sight of the watching throng in Savannah—and were soon out over the Atlantic. Finally landing in Calaboga Sound, forty miles from Savannah, they were in the water more than an hour before being rescued by George A. Savage of Savannah, who had followed along shore on horseback. Their balloon blew away and was never found. Old woodcuts in New York Public Library Collection.

A GLIMPSE *of the* FUTURE *Charted by* SCIENTISTS—1865

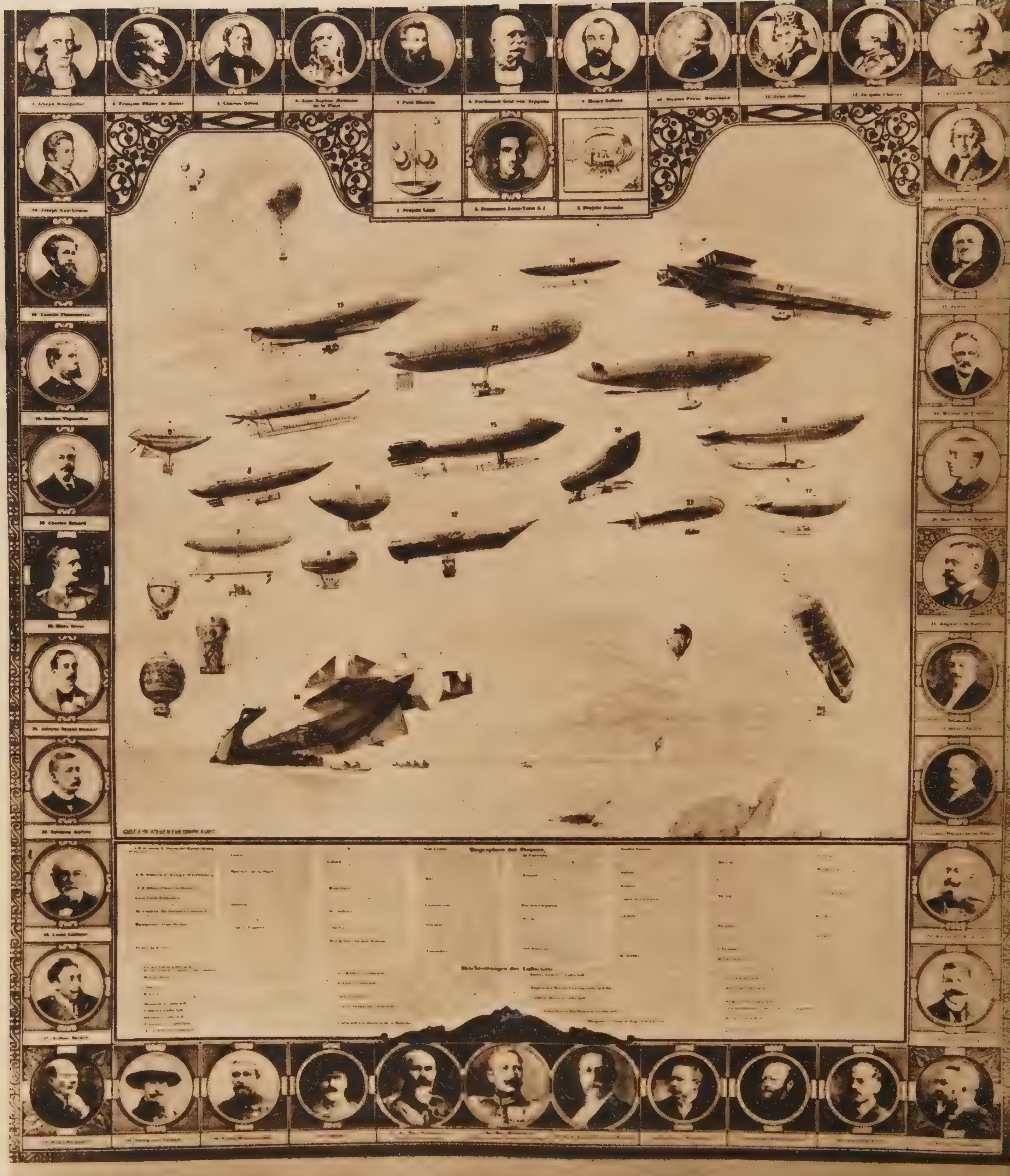


THE END OF THE FIRST EPOCH brings us to the threshold of the American Civil War (1860), which is to be followed by the French Revolution, with France emerging as a Republic and the birth of the German Empire.

Great figures come upon the world stage: Lincoln in America—Gladstone and Disraeli in Great Britain—Bismarck in Germany—as the last of the Napoleons falls.

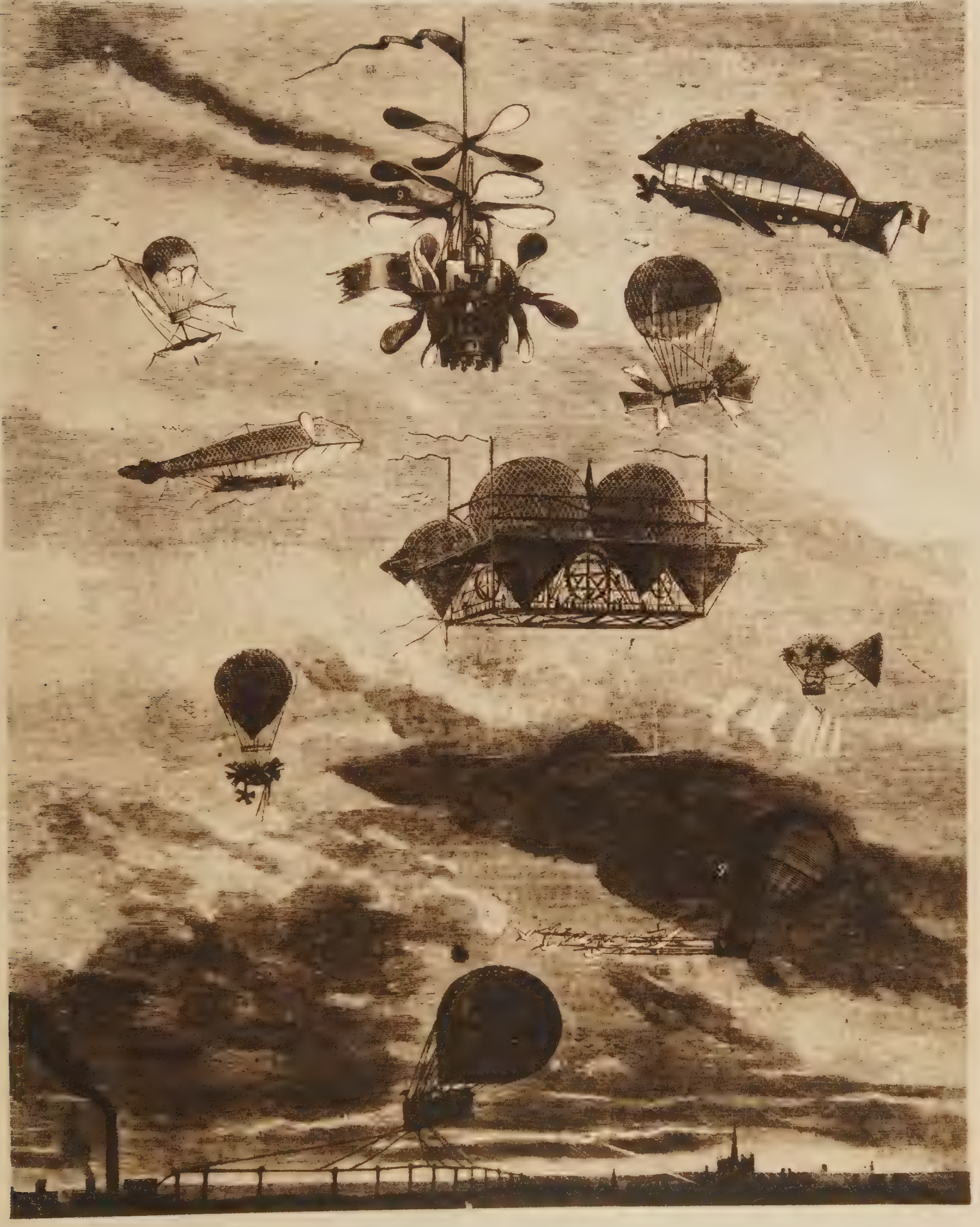
With the approach of these events we close Volume I—to usher in the Second Epoch of Man's Greatest Conquest and its ultimate triumph in Volume II, in which we shall witness the epochal events which are taking place today—

"The World in the Air"



DIE PIONIERE DER LUFTSCHIFFAHRT

ZUSAMMENGESTELLT UND BEARBEITET VON HERM. W. L. MOEDEBECK OBERSTLEUTNANT Z. D. BERLIN
HERAUSGEGEBEN UND VERLEGT VON GUSTAV EYB KUNSTVERLAG STUTTGART
ORNAMENTALER RAHMEN VON PROF. J. V. CISSARZ
GEDRUCKT BEI MAX DETHLEFFS STUTTGART



Old Plate in the Library of Congress at Washington, showing the systems of Aerial Navigation (1865): (1) Alban's System—(2) Petin's System—(3) Henin's System—(4)Helle's System—(5) Julien and Sanson's System—(6) Jarcot's System—(7) Teifel's System—(8) Mereau-Seguin's Balloon—(9) Nadar's System.

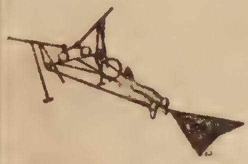
TABLEAU

REPRÉSENTANT TOUT CE QUI A ÉTÉ FAIT DE REMA

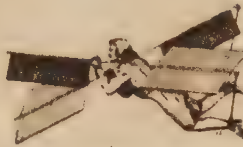
D'après les documents extraits de l

Par **E. DIEUAIDE**, auteur du Tab

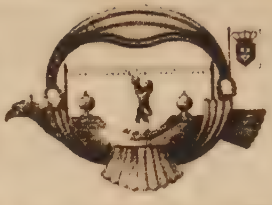
Déposé. Tous droits réservés



Vers 1500. — **Léonard de VINCI**, ses études sur le vol mécanique. On n'aperçoit ici que le tronc du corps. Les ailes, dont on ne voit que les bras, sont abaissées par les pieds et relevées par les mains.

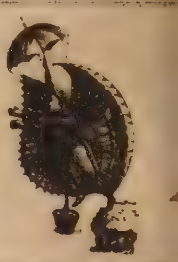


• 1678 — **BESNIER** — Les deux palettes, mues par les pieds et les mains, peuvent s'ouvrir pendant l'abaissement, et se fermer pendant le relèvement.

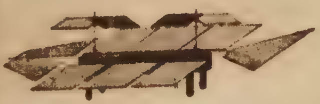


1709. — **Barthelemy Laurent de GUSMAN.** — L'air doit être amené sous les voiles supérieures et soulever l'appareil. Des aimants et des morceaux d'ambre contribuent également à l'ascension.

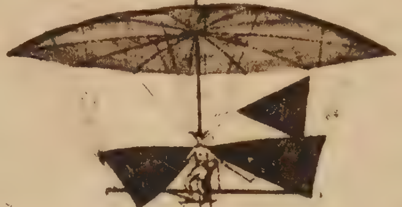
• 1742. — **Marquis de BACQUEVILLE.** — Système d'ailes avec lesquelles l'auteur se cassa la cuisse en voulant traverser la Seine.



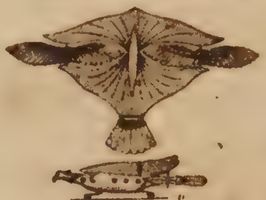
Gravure extraite d'un roman de **RÉTIF DE LA BRETONNE**, intitulé *Découverte australe par un Homme volant.*



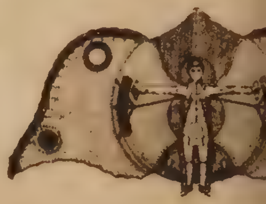
1851 — **AUBAUD** — Combinaison de plans inclinés, [illegible] verticales et d'ailes propulsives. Les pieds sont [illegible]



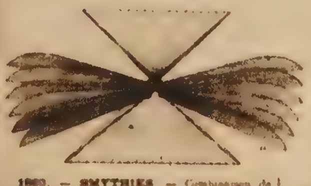
• 1852 — **LETUR** — Système de parachute pourvu d'ailes et d'un gouvernail, avec lequel l'auteur comptait se diriger en partant d'un lieu élevé, et où il trouva la mort.



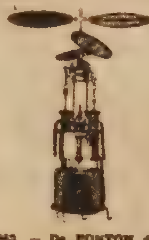
1853. — **Michel LOUP.** — Genre de plan de glissement s'avançant au moyen de quatre ailes tournantes. L'appareil est muni d'un gouvernail et de roues.



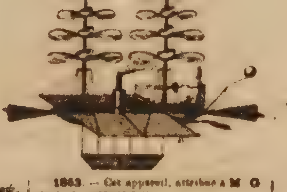
1854. — **BRÉANT.** — Ailes munies chacune
pieds et les mains abaissent les ailes qui sont re



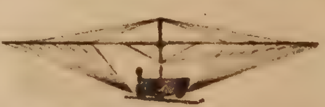
1860. — **SMYTHIES** — Combinaison de plans inclinés et d'ailes à clapets actionnées par la vapeur.



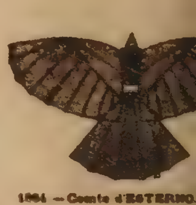
• 1863 — **De PONTON d'AMÉCOURT** — Hélicoptère à vapeur. L'appareil expérimenté ne put que s'alléger sans parvenir à quitter le sol.



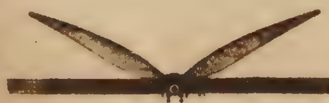
1863. — Cet appareil, attribué à **M. G. de la LANDELLE**, consiste en une combinaison d'hélices, de plans inclinés et de parachutes.



1863. — **De LOUVRIÉ.** — Aéroscaphe, genre de cerf-volant, actionné par une hélice ou directement par un moteur à mélange détonant produisant réaction sur l'air.

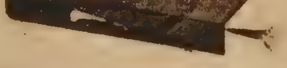


1864 — **Comte d'ESTERNO.**
dont les ailes et la queue peuvent
férents mouvements de l'oiseau.

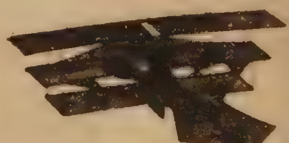


• 1867. — **KAUFMANN.** — Système d'aéroplane à vapeur monté sur roues et combiné avec des ailes.

1867 — **SMYTH** — Aéroplane à hélices mues par un moteur à gaz.

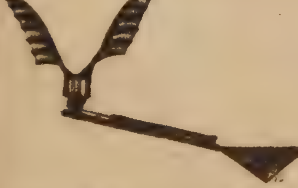


1867 **BUTLER et EDWARDS** — Aéroplane [illegible]. Le déplacement de la traverse en changeant le centre de gravité, doit faire monter ou descendre l'appareil.

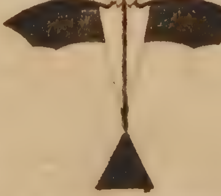


• 1868 — **STRINGFELLOW.** — Système d'aéroplane à plans superposés et à hélices propulsives.

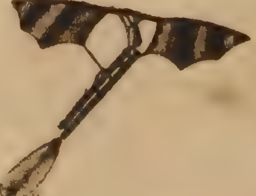
1871
peur et d
de la lit



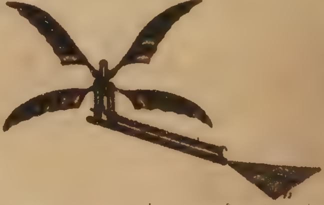
• 1871. — **JOBERT.** — Oiseau mécanique à changement de plan automatique imitant la flexion naturelle de l'aile.



• 1872. — **HUREAU de VILLENEUVE.** — Oiseau mécanique dont l'axe de rotation est incliné à 45°. Cet appareil, expérimenté devant la Société Française de Navigation aérienne a volé avec une vitesse de 9 mètres par seconde.

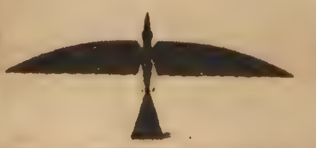


• 1872 — **PÉNAUD.** — Autre genre d'oiseau mécanique, mais sans inclinaison de l'axe de rotation. Cet appareil a volé.

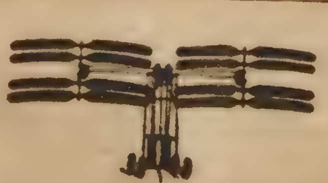


• 1872. — **JOBERT.** — Oiseau mécanique à quatre ailes, dont le battement, au rythme du trot, produit l'équilibre de l'appareil.

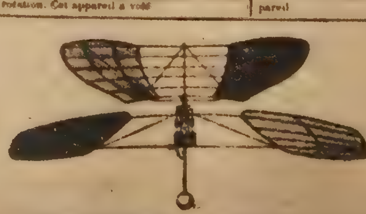
187
rientati
mètres.



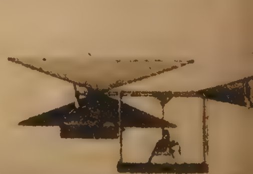
1877. — **De LOUVRIÉ.** — L'Anthropornis, ailes actionnées par la vapeur ou par un moteur à pétrole. Un ressort contribue à l'abaissement des ailes. L'appareil est muni [illegible]



• 1878 — **CASTEL.** — Hélicoptère marchant par l'air comprimé, qui est amené par un tube flexible. Pendant l'expérience, l'appareil est allé se briser contre la muraille.



• 1878. — **FORLANINI.** — Cet hélicoptère, mû par la vapeur comprimée dans une sphère creuse, s'est enlevé à 13 mètres de hauteur. C'est le premier appareil à vapeur qui ait quitté le sol.



1878. — **POMÈS.** — Appareil compos
d'hélices mues par la force humaine.

AVIATION

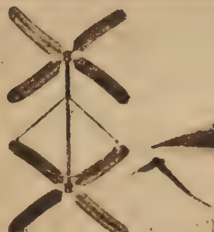
E SUR LA NAVIGATION AÉRIENNE SANS BALLONS

HUREAU DE VILLENEUVE

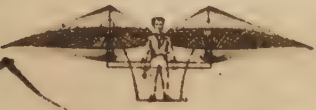
de mécanique, pour faciliter les Études

Nota. — Les appareils précédés du signe * ont été construits et expérimentés.

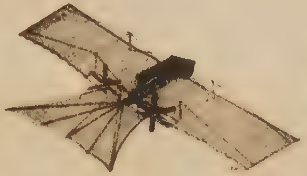
pareil
orment
tie le



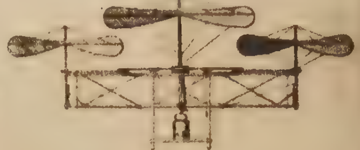
* 1784. — **LAUNOY et BIENVENU.** — Premier hélicoptère présenté à l'Académie des sciences, composé de deux hélices tournant en sens inverse sous l'effort d'un arc de baleine.



1808. — Jacob **DEGEN**. — Système d'ailes formant parachute. Cet appareil n'ayant pu s'enlever, l'auteur y ajouta, par la suite, un petit ballon.



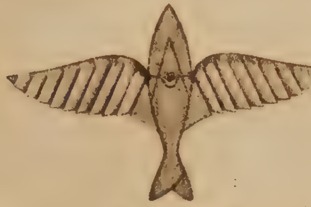
1842. — **HENSON**. — Système de plan incliné, monté sur roues. Les hélices sont actionnées par une machine à vapeur.



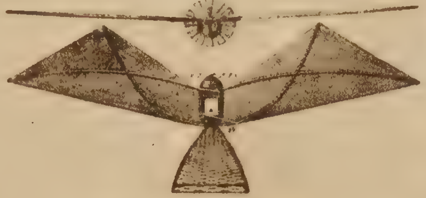
1845. — **COSSUS**.

Appareil composé d'hélices ascensionnelles mues par la vapeur.

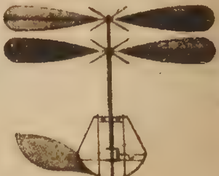
. — Viscount **CARLINGFORD**.
d'aéroplane monté sur roues, possé-
hélice et une queue mobile.



* 1857. — **LE BRIS**. — L'auteur produisait l'abaissement des ailes à l'aide de leviers; des ressorts aidaient à les relever.

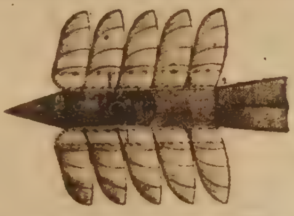


* 1857. — Du **TEMPLE**. — Disposition d'aéroplane monté sur roues, avec une hélice à l'avant actionnée par la vapeur.

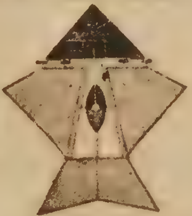


1859. — **BRIGHT**. — Système composé d'hélices ascensionnelles tournant en sens inverse.

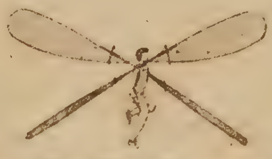
ROOF. — Appareil composé
leviers, et dans lequel l'auteur



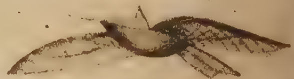
1864. — **STRUVE et TELESCHEFF**. — Ailes mues par la force humaine agissant sur un ressort.



1864. — **CLAUDEL**. — Aéronef orthoptère. Système d'ailes tournantes actionnées par la vapeur.

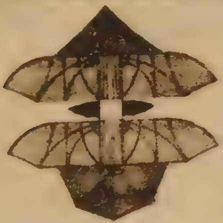


* 1866. — **BOURCART**. — [illegible] par les pieds. Dans cette disposition, l'aile se présente en tranchant pendant son relèvement, et à plat pendant son abaissement.

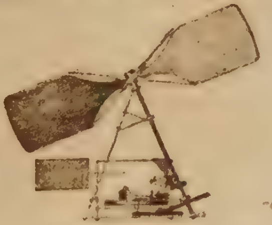


* 1867. — Le **BRIS**. — Les ailes sont fixes, mais leur orientation convenable force l'appareil à s'enlever.

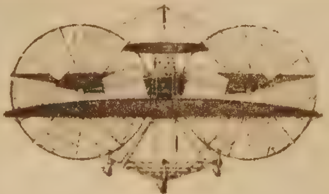
principe



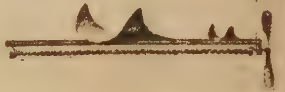
1871. — **DANJARD**. — Appareil formant parachute composé de deux ailes propulsives et d'une hélice, le tout mû par la force humaine.



1871. — **POMÈS et de la PAUZE**. — Appareil pourvu d'un gouvernail et d'une hélice actionnée par un moteur à poudre.

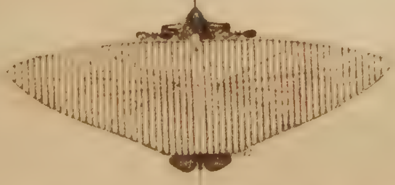


* 1871. — Thomas **MOY**. — Système d'aéroplane monté sur roues et dont les hélices sont mises en mouvement par une machine à vapeur.

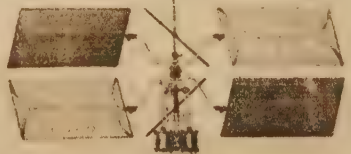


* 1871. — **PÉNAUD**. — Premier aéroplane de l'an- [illegible] d'une hélice mue par la torsion du caoutchouc. Cet appareil, qui peut monter ou descendre suivant la position de son centre de gravité, a pu franchir 60 m. en 13 secondes.

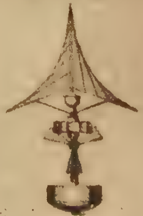
ce volante composée d'une hélice d'ascension, d'une d'o-
fait mouvoir les hélices agit directement sur ces der-



1876. — **PÉNAUD et GAUCHOT**. — Système d'aéroplane à vapeur pourvu d'hélices, d'un gouvernail et [illegible] flexibles.

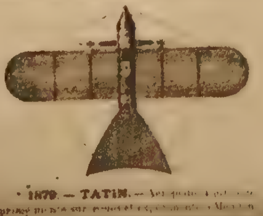


* 1877. — **R. DIEUAIDE**. — Expérience sur l'hélice au moyen d'un tube flexible amenant la vapeur d'une chaudière fixe. L'hélice double ne paraît pas susceptible, à cause de la perte due [illegible] ascensionnelle de plus de 12 kilogrammes par cheval-vapeur.

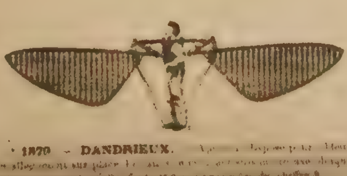


1877. — **MÉLIKOFF**. — Hélicoptère à vapeur d'éther. L'hélice est disposée pour former parachute.

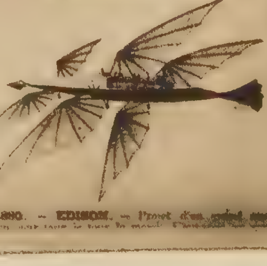
— **BREAREY**. — Système d'ailes flexibles mues par la
appareil est monté sur roues, et son centre de gravité est dé-
l'ascension ou la descente.



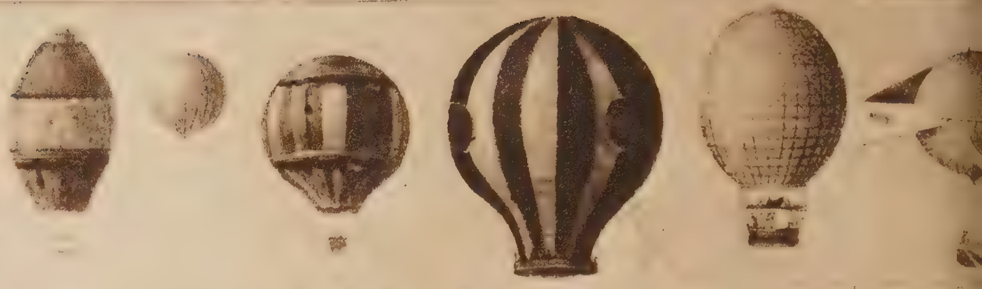
* 1879. — **TATIN**. — [illegible] à une vitesse de 8 mètres par seconde, cet appareil



* 1879. — **DANDRIEUX**. — [illegible] et le mouvement qu'elles font est à peu près celui [illegible]



1880. — **EDISON**. — Projet d'un grand [illegible]



27 Août 1783

19 Septembre 1783

19 Janvier 1784

22 Février 1784

22 Février 1784

PREMIER VOYAGE AÉRIEN DANS UNE MONTGO

21 Novembre 1783

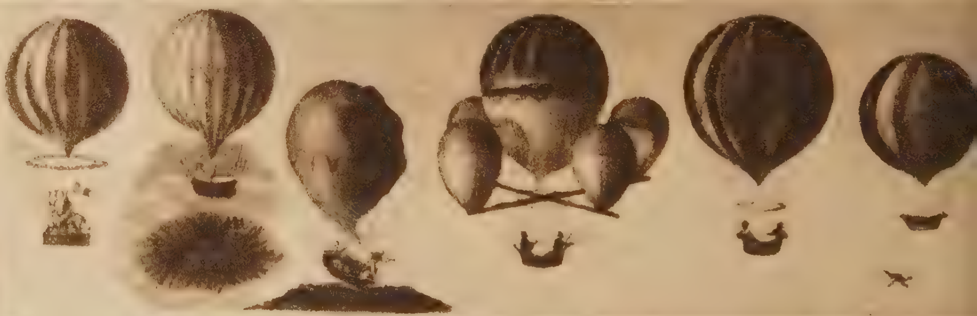
THÉORIE

Octobre 1797

Novembre 1802

18 Juillet 1803

Mort de Pilâtre de Rozier et de Romain



Novembre 1804

Novembre 1836

SYSTÉME PETIN

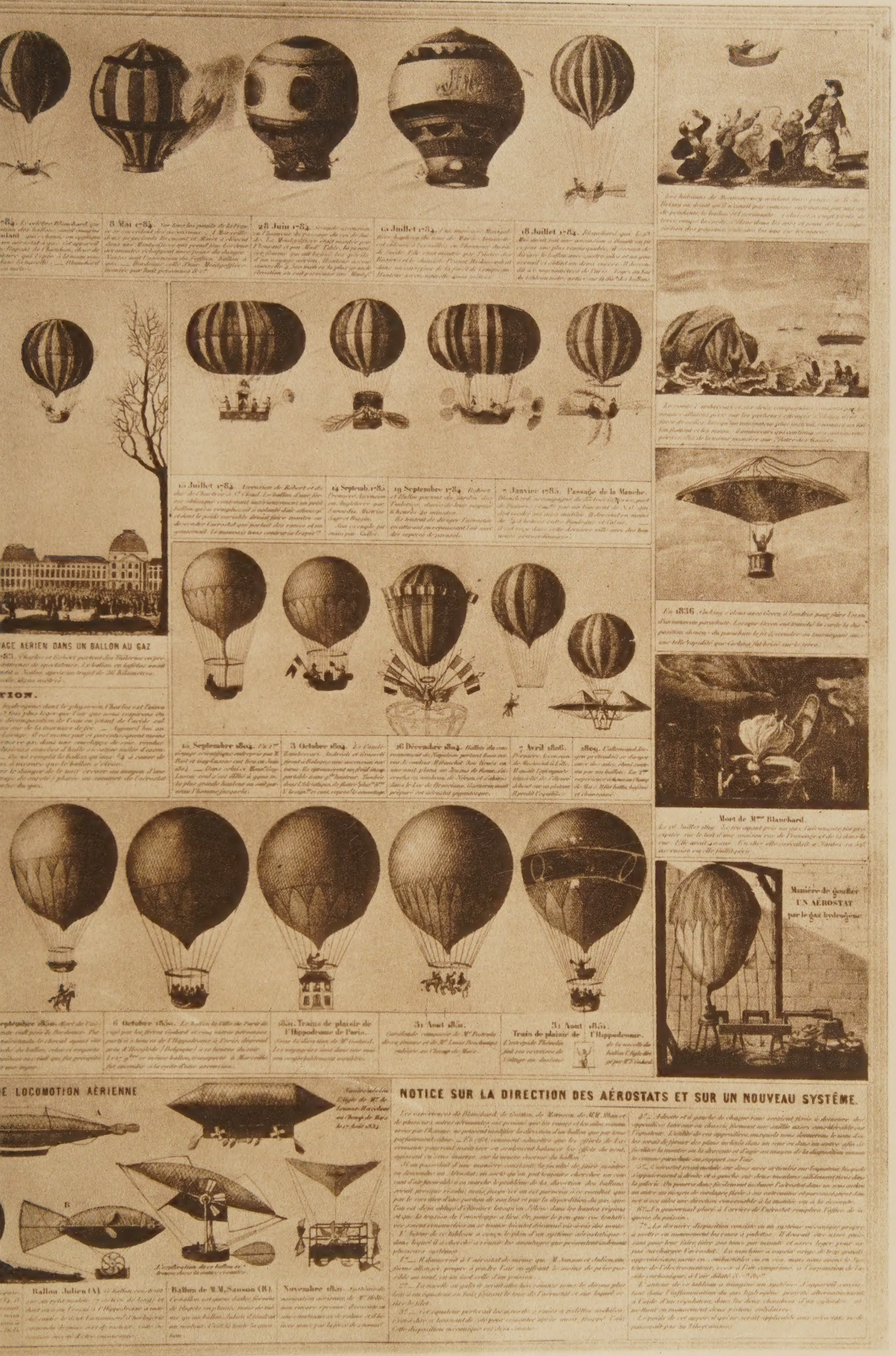
Marche horizontale

Marche perpendiculaire

Globe volant

15 Juillet 1784

Ballon à parachute



–84. Le célèbre Blanchard, qui [illegible]

8 Mai 1784. [illegible]

28 Juin 1784. Grande ascension [illegible]

15 Juillet 1784. [illegible]

18 Juillet 1784. Blanchard, qui [illegible]

Les habitants de Montmorency [illegible]

15 Juillet 1784. Ascension de Robert et du duc de Chartres à St Cloud. [illegible]

14 Septemb. 1785. Première Ascension en Angleterre [illegible]

19 Septembre 1784. Robert et Hullin partent du jardin des Tuileries, durée de leur voyage 6 heures 40 minutes. [illegible]

7 Janvier 1785. Passage de la Manche. Blanchard, accompagné du docteur [illegible]

…AGE AÉRIEN DANS UN BALLON AU GAZ

–83. Charles et Robert partent des Tuileries en présence [illegible] de spectateurs. Le ballon en taffetas [illegible] après un trajet de 36 kilomètres. [illegible]

…TION.

[illegible]

En **1836**, Cocking s'éleva avec Green à Londres pour faire l'essai d'un nouveau parachute. Lorsque Green eut tranché la corde, la disposition vicieuse du parachute le fit descendre en tournoyant avec une telle rapidité que Cocking fut brisé sur la terre.

16 Septembre 1804. [illegible]

3 Octobre 1804. [illegible]

16 Décembre 1804. Ballon du couronnement de Napoléon [illegible]

7 Avril 1806. [illegible]

1809. [illegible]

Mort de Mme Blanchard.

[illegible]

…eptembre 1850. [illegible]

6 Octobre 1850. [illegible]

1851. Trains de plaisir de l'Hippodrome de Paris. [illegible]

31 Août 1851. [illegible]

31 Août 1851. Trains de plaisir de l'Hippodrome. [illegible]

…E LOCOMOTION AÉRIENNE

Ballon Julien (A). [illegible]

Ballon de M.M. Sanson (B). [illegible]

Novembre 1851. [illegible]

NOTICE SUR LA DIRECTION DES AÉROSTATS ET SUR UN NOUVEAU SYSTÈME.

[illegible]

NHMRL0022300